

PURCHASING

THE NATIONAL MAGAZINE FOR PURCHASING AGENTS • SINCE 1915



L. ROSENWALD

SEE PAGE 57

TWO PARTS

SECTION I

Conservation of Materials Will Help Win the War

A CONOVER • MAST PUBLICATION

FEBRUARY, 1942

35 CENTS PER COPY

FOR ALL-OUT PRODUCTION



THIS PLAN FOR SECURING all-out production is proving effective in meeting the needs of today's twenty-four-hour operation.

As a user of lubricants you are entitled to the services of a trained lubrication engineer who will help you streamline lubrication practices throughout your plant.

The Texas Company provides such service to users of Texaco Products, thus keeping present equipment at peak performance—assuring maximum output.

Outstanding performance has made Texaco preferred in the many fields listed in the panel. These Texaco users enjoy many benefits that can also be yours. Just phone the nearest of more than 2300 Texaco distribution points in the 48 States, or write:

The Texas Company, 135 E. 42nd Street, New York, N. Y.

FOR YOUR ENJOYMENT • TWO GREAT RADIO PROGRAMS



FRED ALLEN every Wednesday night. See your local newspaper for time and station.

METROPOLITAN OPERA. Complete broadcasts of great operas every Saturday. See your local newspaper for time and station.



THEY PREFER TEXACO

★ More Diesel horsepower on streamlined trains in the U. S. is lubricated with Texaco than with all other brands combined.

★ More locomotives and cars in the U. S. are lubricated with Texaco than with any other brand.

★ More revenue airline miles in the U. S. are flown with Texaco than with any other brand.

★ More buses, more bus lines and more bus-miles are lubricated with Texaco than with any other brand.

★ More stationary Diesel horsepower in the U. S. is lubricated with Texaco than with any other brand.



TEXACO Lubricants and Fuels

FOR ALL INDUSTRIES

RETURN METAL DRUMS PROMPTLY . . . thus helping to make present supply meet industry's needs and releasing metal for War Needs.

TECHNOLOGY DEPT.

Look to

CENTURY MOTORS

*For Continuous
Three-Shift PRODUCTION Duty*

All Century Motors are built for continuous, three-shift, all-out production, and designed to contribute to the top performance of every machine they drive.

Under the pressing demands of war, industry can rely on Century Motors to stand up under continuous 24 hour per day full load conditions.

There's the correct Century Motor especially designed and built for practically every kind of service condition known to industry; in a wide variety of types and sizes from fractional to 400 horsepower.

Century has shortened the time necessary to make shipments of AC and DC motors on war orders. Call in your nearest Century Motor Specialist or write direct now. Our 39 years of experience in building and applying motors to industrial requirements is always at your service—you may find this particularly valuable.

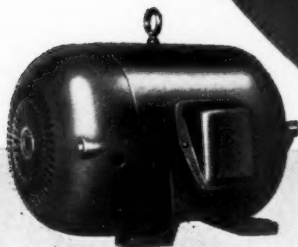
Century
MOTORS

CENTURY ELECTRIC COMPANY

1806 Pine Street, St. Louis, Mo.

Offices and Stock Points in Principal Cities

One of the Largest Exclusive Motor
and Generator Manufacturers in
the World.



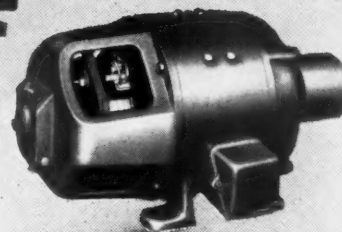
▲
Century Totally
Enclosed Fan-
Cooled Motor for
surroundings
hazardous to
ordinary motors.



➤
Century Open
Rated General
Purpose Motor.



▲
Century Splashproof
Motor protects against
splashing liquids and
falling solids.



◀
Century Direct
Current Motor for
all DC applica-
tions.



▲
Century Repulsion
Start Induction
Motor for hard-to-
start loads.

When writing Century Electric Company please mention Purchasing

NORTON ABRASIVES



NIGHT LIFE . . . at a grinding wheel plant

The new Plant 1 (left) replaced the original building at the Norton plant in 1939.

The new Plant 3 (right) replaced the former building in 1938.

New Abrasive Storage buildings in 1941.

Total additional floor space, 7.6 acres, completed this year.

New tunnel kilns, new facilities, larger payroll, day and night operation, have stepped up production.

NORTON COMPANY, Worcester, Mass.

BEHR-MANNING DIVISION, TROY, N. Y.—Abrasive Paper and Cloth

WHEN IT'S AN ABRASIVE PROBLEM, CALL IN NORTON ENGINEERING





Whether you light square inches of space on business machines or acres of industrial space, General Electric makes the right lamp for the purpose. For the former, the small 6-watt fluorescent lamp is useful. For the latter, the new 3000-watt mercury lamp may be the answer.

G.E. Announces Big New 3000-watt MAZDA Mercury Lamp!

Designed for High Bay Lighting

LENGTH—54 $\frac{7}{8}$ inches overall
LUMENS—Approximately 120,000 initial
PRICE—List price is \$45.00

To help industry speed production of war material on a 24-hour basis, General Electric now makes available a new G-E MAZDA Mercury lamp. Eight times more powerful than any previous lamp of its kind, the new G-E MAZDA AH-9 is 54 $\frac{7}{8}$ inches long and is rated at 120,000 lumens.

This new tool is ideally suited for steel mills, foundries, erecting


shops, and other large industrial areas where high bay lighting is needed . . . and where swift and accurate seeing can speed up production. Rated at 2000 hours life, it will effect economies in cost of operation, servicing and maintenance, as compared with smaller mercury lamps.

See your General Electric lamp distributor for details.

G-E MAZDA LAMPS

GENERAL  ELECTRIC

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Drilling barrels of machine guns.
In operations like this, MO-MAX
has demonstrated its superiority.

MORE TUNGSTEN
is unnecessary
LESS TUNGSTEN
is not enough
MO-MAX

MOLYBDENUM-TUNGSTEN HIGH SPEED STEEL

—the original Moly high-speed steel, with less than two per cent of Tungsten, has demonstrated its superior cutting quality throughout more than nine years of widely varied service. It offers also the unique advantage of availability from fourteen independent producers listed below.

FORMULA FOR GENERAL PURPOSE

MO-MAX

Carbon.....	.80
Molybdenum.....	8.50
TUNGSTEN.....	1.50
Chromium.....	4.00
Vanadium.....	1.00

For detailed information ask your usual source of supply or write The Cleveland Twist Drill Co., Cleveland, Ohio.

"LMW"	Alleghany Ludlum Steel Co.	"Molite 8"	Columbia Tool Steel Company	"Tatmo"	Latrobe Electric Steel Co.
"Mohican"	Atlas Steels, Ltd.	"Rex-T-Mo"	Crucible Steel Co. of America	"S.T.M."	Simonds Saw and Steel Co.
"Bethlehem HM"	Bethlehem Steel Company	"Di-Mol"	Henry Disston & Sons, Inc.	"Mo-Tung"	Universal-Cyclops Steel Corp.
"Mo-Cut"	Braeburn Alloy Steel Corp.	"Rex-T-Mo"	Halcomb Steel Co.	"Vul-Mo"	Vulcan Crucible Steel Co.
"Star Max"	Carpenter Steel Co.	"Mogul"	Jessop Steel Company		

When writing The Cleveland Twist Drill Co. please mention Purchasing

**ONE PRESIDENT
AND ONE POLICY FOR**

50 Years



FRANKLIN G. SMITH,
*President of
The Osborn Manufacturing
Company since 1892*

★ Osborn has enjoyed the vigorous leadership of one man for the past 50 years—its founder and president, Franklin G. Smith. In 1892 he established the policy that every brush bearing the Osborn name should not only be of high quality but should be sold and serviced in a manner to insure the greatest value to the customer.

Adherence to this policy over a 50-year period has presented no small problem. Maintaining Osborn product quality today, requires the constant checking of over 4000 brush items. Osborn's research laboratories are constantly at work designing new products and methods of brush application for industry.

Recently, a new, exclusive service has been made available. It is the OSBORN BRUSHING ANALYSIS and offers, without charge, the services of brushing specialists who will analyze your production operations and show you where and how brushes can be used to speed production and save time and money.

It is because of Franklin Smith's farsightedness that 1942 finds Osborn prepared, both in product and personnel, to aid America in its drive toward new, all-time high production records. The biggest job in our 50-year history lies ahead and we approach it with confidence.

THE OSBORN MANUFACTURING COMPANY

5401 Hamilton Avenue

Cleveland, Ohio



WORLD'S LARGEST MANUFACTURER OF BRUSHES FOR INDUSTRY

MACKLIN GRINDING WHEELS



Macklin Wheels Are Uniform

Uniform grinding wheels must be subjected to sufficient heat to fuse the bond with the abrasive grains. Vitrified wheels undergo extreme heat in continuous and periodic kilns. Scientific and accurate equipment is used to record and regulate heat control to produce highest quality Vitrified wheels, while Resinoid, Silicate, Shellac and Rubber bonded wheels are cured at lower temperatures in electric ovens and are subjected to the same rigid control. Protect Your Production with Uniform Macklin Grinding Wheels.

MACKLIN COMPANY

Manufacturers of GRINDING WHEELS — JACKSON, MICHIGAN, U. S. A.

Distributors in all principal cities

Sales Offices: — Chicago — New York — Detroit — Pittsburgh — Cleveland — Cincinnati — Milwaukee — Philadelphia

When writing Macklin Company please mention Purchasing

RIGHT NOW! ... *these Low-Cost DRILL PRESSES* will cure your drilling headaches



Other DELTA Low-Cost Machines



Cut-Off Machine cuts speedily and to exact lengths a wide variety of materials. Priced at one half the usual cost of machines of this type.



Metal-Cutting Band Saw cuts almost anything in metals and plastics from jig and fixture bases $1\frac{1}{2}$ " by 2" thick to draw die segments 6" thick.



Bench and Pedestal Grinders "that never forget their goggles"—the safest, most accurate and efficient grinders made.

No. 1370
—Floor type
17-inch "Slo-Speed"
Delta drill press with
No. 2 Morse Taper
Spindle and standard
tilting table. Shown
with motor.

When you are confronted with an urgent need for a quick increase in production capacity in connection with the U. S. armament program—you should, *at once*, check into the possibility of utilizing the low cost Delta Drill Presses. These efficient and flexible machines are in active use in plants all over the country—as production line equipment—auxiliary machines—for special set-ups—and in hundreds of tool rooms. Their first cost, and their operating costs, are low—they are sturdy, accurate and easily adaptable to your special needs.

New Delta Power-Feed Drill Press

Incorporate many special features and offer a wide range of feeds, from .0010 to .016 inches per revolution of spindle in the slow-speed drill presses, and from .0005 to .009 inches in the high-speed machines. This new line includes single and multiple spindle 17" units, in slow speed and high speed models, with table-raising or head-raising mechanisms, powered with either Delta or standard NEMA frame motors—all at considerably lower cost than you expect for drill presses of this quality.

Send for Catalog

Don't judge the value of Delta drill presses to your shop by their low cost. It will pay you to investigate them carefully and learn the full possibilities of these quality units that are effecting a revolution in present-day production methods. Fill out the coupon and send for the complete catalog of Delta low-cost drill presses.



DELTA MILWAUKEE

THE DELTA MANUFACTURING COMPANY
639-B E. Vienna Avenue, Milwaukee, Wis.

Please send me catalog of Delta Machines, giving specifications and prices on Delta Drill Presses. ☐ I am also interested in Delta Cut-Off Machines ☐ Delta Metal-Cutting Band Saw ☐ Delta Grinders ☐ Delta Power Feed Drill Presses.

Name.....

Address.....

City..... State.....

When writing The Delta Manufacturing Company please mention Purchasing

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BULLETINS

CATALOGS

LITERATURE

ON REQUEST TO AID YOU
IN PURCHASING



1—HIGH VOLTAGE INDICATORS

Air Reduction Co., Inc.

Contents: Pamphlet describes Airco's complete line of high voltage indicators, specifically designed for the protection of men working on high voltage lines. Gives construction, installation and operating details of the type R and of the type RC for concentrated glow, and type RS for greater illumination. Photographs show the indicators in actual use and a suggested method of mounting.

2—PATENT BACKGROUND

Allis-Chalmers Mfg. Company.

Contents: An interesting book about engineering patents and patent law. The articles originally appeared in the Allis-Chalmers "Electrical Review" and were written by patent attorneys and engineers. The subjects are treated in a simple manner and avoid all legal jargon. Many interesting examples are given, and numerous photographs and diagrams illustrate the text. 8½" x 11", 56 pages.

3—MARKING CRAYONS

The American Crayon Company.

Contents: Many types of chalk and crayons are featured, each designed for particular kinds of industrial marking. Included are materials for marking on boards, glass, logs, red hot metal, castings cases, etc. Different colors are available for noting various types of marking.

4—STEAM TRAPS

Armstrong Machine Works.

Contents: Gives a great deal of useful information about steam traps and how to properly use them. Numerous cut-away photographs show how traps function, and diagrams show how to install them in steam systems. Full specifications for different types of traps are

given, as well as trap capacity charts. 8½" x 11", 36 pages.

5—BOOK FOR NEW EMPLOYEES

E. C. Atkins & Company.

Contents: An interesting little book containing information about company policy, instructions and safety data of use to all employees, but particularly to new employees. The text is written in a home-spun manner and is plentifully broken up by sketches.

6—CARBON AND ALLOY STEEL TUBING

The Babcock & Wilcox Tube Company.

Contents: Book describes the properties of carbon and alloy steel tubing for high temperature and high pressure service. Sections include the B & W seamless-tube manufacturing process, rupture testing, maximum allowable working stresses, steel for sub-zero application, effect of hydrogen, and air-hardening properties. Also includes a fully illustrated section on causes of tube failure.

7—HOSE CLAMPS

Band-It Company.

Contents: Circular features a system for clamping and repairing all sizes of hose, pipe, tanks, etc. The equipment includes a tool, band and buckle, all of which is conveniently portable or suitable for bench use. Successive illustrations show the complete steps in its use.

8—DRILLING HARDENED STEEL

Black Drill Company.

Contents: Features the properties and uses of "hardsteel" drills, for drilling in very hard metals. Gives correct speeds for various size drills and shows by photographs how to supply the coolant and how to properly grind the drills. 4" x 7", 16 pages.

9—SOCKET, BOX AND END WRENCHES

Blackhawk Mfg. Company.

Contents: A complete guide to this line of socket, box-type, specialty and torque-indicating wrenches, describing their uses and features. Photographs and drawings illustrate main features of the various types. Also shown are service pliers, end wrenches, nugget sets with bench, master mechanic sets, and special wrenches. 3½" x 8½", 48 pages.

10—GASOLINE SHOP TRUCK

The Buda Company.

Contents: Features a ½-ton shop truck called "Chore Boy", said to operate all day on 1 gallon of gasoline. Width of truck is 38" and it will turn in a 7 ft. 3 in. radius. Designed to give fast, economical and easily maneuverable service. Maximum speed 15 m.p.h. 4 pages.

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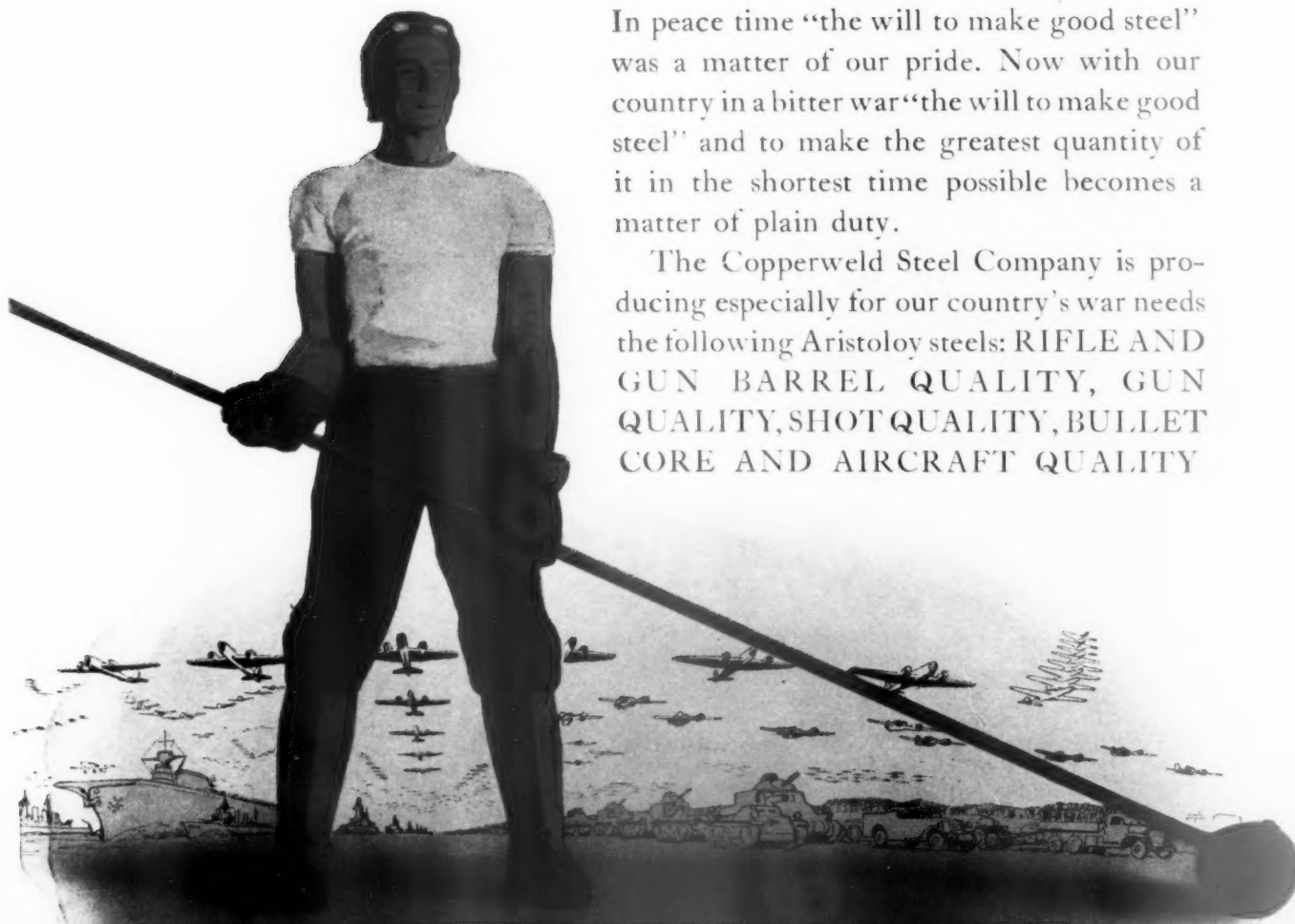
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*Now, More than Ever * * * * **

THE **WILL** TO MAKE GOOD STEEL

In peace time "the will to make good steel" was a matter of our pride. Now with our country in a bitter war "the will to make good steel" and to make the greatest quantity of it in the shortest time possible becomes a matter of plain duty.

The Copperweld Steel Company is producing especially for our country's war needs the following Aristoloy steels: RIFLE AND GUN BARREL QUALITY, GUN QUALITY, SHOT QUALITY, BULLET CORE AND AIRCRAFT QUALITY



COPPERWELD STEEL COMPANY WARREN, OHIO

**ARISTOLOY
STEELS**

CARBON TOOL STEELS

STAINLESS STEELS

AIRCRAFT QUALITY STEELS

ALLOY TOOL STEELS

NITRALLOY STEELS

BEARING QUALITY STEELS

"SPECIAL QUALITY" TOOL AND ELECTRIC FURNACE ALLOY STEELS

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CATALOGS BULLETINS ON REQUEST

11—HIGH GRADE PAPERS

Byron Weston Company.

Contents: An interesting discussion about paper shortage, standardization, how the quality of paper will be affected, and ways to beat the paper shortage. Also contains a list of cotton fibre content papers and their uses—ledgers, bonds, indexes and machine accounting.

12—LOW-TEMP. MELTING ALLOY

Cerro De Pasco Copper Corp.

Contents: A complete book about the properties and methods of using "Cerro-matrix", a low-temperature-melting alloy composed of bismuth, lead, tin and antimony that expands slightly on solidification. Numerous large photographs show actual steps in handling this material for many different processing methods. 36 pages.

13—BLOW TORCH POINTERS

Clayton & Lambert Manufacturing Co.

Contents: Describes the construction, operation and care of blow torches. Treats such features as fuel, filling, starting, stopping, correct flame, and how to use the torch for soldering, sweating, brazing, etc. A page of safety hints are included. Photographs and sketches help with the explanations. 16 5" x 7" pages.

14—HYDRO-DEGREASING

The Curran Corporation.

Contents: Describes the properties and uses of several types of Gunk Concentrates, used for cleaning and degreasing. The solution is brushed or sprayed on

until all grease or oxidized oil is melted into a thin liquid state, then it is sluiced off with a water hose. Accompanying sheet shows advantages of this solution.

15—RESIN-BONDED PLYWOOD

Durez Plastics & Chemicals, Inc.

Contents: Folder contains a brief history of the plywood industry, describes present-day methods of manufacture, and illustrates the widespread uses of this new structural material, including its application in aircraft. 8-page folder.

16—AIR RAID SIRENS

Federal Electric Company.

Contents: A very timely bulletin telling how to select, install and use sirens for air raid protection. Explains the construction of sirens and their controls, and shows by diagram various ways of wiring the circuits. 4 pages.

17 CARBIDE CUTTING TOOLS

Firth-Sterling Steel Company.

Contents: Very educational booklet about carbide cutting tools, describing their purpose, use and proper care. Treats such pertinent subjects as grinding chip breaker, various chip groove designs, clearance and rake angles and how to select the proper tool. Shows by sketches the wrong and right way to use tools.

18—INDUSTRIAL BRUSHES

The Fuller Brush Company.

Contents: Features a great variety of "steelgrip" industrial brushes of all types and for many purposes. The numerous varieties are shown by photo-

graphs and several types are shown in actual use. The brushes have permanent metal cores.

19—FRACTIONAL HORSEPOWER MOTOR

General Electric Company.

Contents: Features a ball bearing, totally enclosed fractional hp motor designed to withstand frequent starting and stopping, plugging and metal dust atmospheres. Available in 1/4, 1/3, 1/2 and 3/4 hp sizes, three phase and 1725 rpm. 4 pages.

20—FLUORESCENT LIGHTING

General Electric Company.

Contents: Interesting book about fluorescent lighting and its applications. Treats such matters as supplementary illumination, how-to recipes, uniformity of light and contains essential data about industrial white and blue-white RF lamps. Includes tables on mounting heights, and shows light distribution diagrams. Many photographs.

21—REFRACTORY MATERIALS

General Refractories Company.

Contents: A complete book listing many types of refractory materials—fireclay brick, alumina brick, silica brick, acid-proof brick and numerous others. A wide assortment of shapes and sizes are listed, with complete dimensions. Many useful tables of engineering information given, to help prospective buyer. 72 pages.

22—FURNACE INSPECTION DOORS

Gillette Kiln Sales Company.

Contents: Useful information about the construction, operation and installation of furnace inspection door. The door is applicable to various types of industrial furnaces, boilers and kilns, and is said to withstand continuous heat up to 2500 degrees F. 4" x 8 1/2", 4 pages.

23—FLAT BELTS

L. H. Gilmer Company.

Contents: Contains a great deal of useful information about flat belts in general and 2 "Kable Kord" belts in particular. Tells how to select and determine the correct size of belts, as well as how to install and maintain flat belts. Includes useful formulas and tables for solving belt problems.

24—PLASTIKON RUBBER PUTTY

B. F. Goodrich Company.

Contents: A catalog section describing the properties of a non-hardening, corrosion-resistant, waterproof, air-tight and quick drying rubber putty. Lists all the grades and tells the applications and methods of use. Among the applications are glazing, use in chemical plants,

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"HASTE MAKES WASTE" AS POP SEES IT



UNDER the stress of defense demands, "faster production" is heard with endless insistence in nearly every plant or shop. But speed which results in a high percentage of rejects isn't speed at all.

That is why *the right tool* is as important as *the right man* for the job. And preventing abuse or needlessly rapid wear-out of tools is another factor in the mind of the efficient foreman or production superintendent.

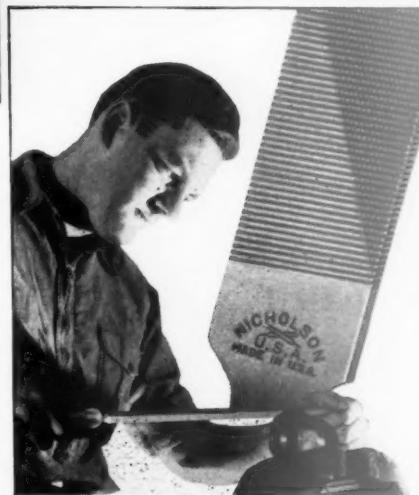
Files. The current demand is prodigious. Nevertheless, Nicholson is deeply interested in enabling users to get the most out of them—both in wear and in product output.

Nicholson and Black Diamond special-purpose files, for instance, have distinctive features for fast and efficient work on certain types of metals and filing jobs. Naturally, they must be used properly for best results. Toward this end, Nicholson has prepared a series of

TECHNICAL BULLETINS on the characteristics and handling of Nicholson and Black Diamond Files for Stainless Steel, Aluminum, Brass, Lead, Foundry Castings, Die Castings, Plastics; Shear Tooth and Lathe filing.

• **WRITE US** for any of these Bulletins (whether you use our files or not). And for your file needs, consult your mill-supply house.

NICHOLSON FILE CO., Providence, R. I., U. S. A.
(Also Canadian Plant, Port Hope, Ont.)



BRASS FILE. In addition to short upcut angle, has **VERY FINE** and long-angle overcut—producing small scallops which break up filings and enable file to clear itself of chips. Excellent for both fast metal removal and smooth finishing—according to pressure applied.

NICHOLSON FILES

FOR EVERY PURPOSE

NICHOLSON
U.S.A.
MADE IN U.S.A.

When writing Nicholson File Co. please mention Purchasing

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plumbing, air-conditioning of buildings or rooms, marine service and general construction. 8½" x 11", 2 pages.

25—MIDGET D.C. RELAY

Guardian Electric Mfg. Company.

Contents: A circular featuring the series 195 d-c midget relay designed to withstand vibration. Relay coil is available for any voltage up to 75 volts d-c. Average power consumption 2.5 watts. Weight 0.85 oz. Available for many types of service. Single page circular.

26—HOW TO STACK AND LOAD

The Hinde & Dauch Paper Company.

Contents: Booklet gives eight rules for properly stacking and loading corrugated shipping boxes, designed to help manufacturers conserve time, space and money; and likewise to prevent damage to packaged merchandise while in transit or storage. 3½" x 6", 12 pages.

27—PORTABLE ELECTRIC TOOLS

Independent Pneumatic Tool Co.

Contents: A profusely illustrated, two-color book which gives complete descriptions and specifications of the Thor line of universal type electric drills, drill stands, screw drivers, nut setters, tappers, saws, hammers, nibblers, grinders, sanders, polishers and electric tool accessories. 8½" x 11", 64 pages.

28—SELF LUBRICATING BEARINGS

Johnson Bronze Company.

Contents: Features the properties and uses of Ledaloyl self lubricating bearings and bushings. Tables and charts

show the properties of these products, and numerous tables and dimension drawings give full sizes and specifications. Valuable information for the design engineer. Many types shown. 8½" x 11", 36 pages.

29—VIBRATION ISOLATORS

The Korfund Company.

Contents: Shows prominent installations of type S vibro-isolators, including marine and stationary applications to diesel engines and industrial machinery. A chart showing the rated capacities of this series of isolators is included. 8½" x 11", 8 pages.

30—INDUSTRIAL DIAL SCALES

The Kron Company.

Contents: Explains the principle of operation and the construction of industrial dial type scales. Gives complete information about platform scales (dormant and portable), bench scales, portable pan scales, track scales, pan scales and many other types suitable for industrial use. Several photographs of actual installations are likewise shown. 20 pages.

31—TOTALIZING RECORDERS

Leeds & Northrup Company.

Contents: Features the micromax telemetering and totalizing recorders for electric power suitable for industrial power plants or power purchasers. Shows how plants are effecting operating economies by indicating and recording load continuously and automatically. 28 pages.

32—MODERN ARC WELDING

Lincoln Electric Company.

Contents: An interesting book featuring the "shield-arc" welder with self-indicating dual continuous control. Numerous photographs, charts and diagrams show the operation, uses and advantages of this method of welding control. Full construction and operating details of the equipment are given.

33—CENTRIFUGAL DRYER

McNally Pittsburg Mfg. Corporation.

Contents: Features a centrifugal dryer that gives a continuous mechanical drying operation. Full operating principle, construction details and applications are given. 4 8½" x 11" pages.

34—SAFETY STEEL SCAFFOLDING

Mechanical Handling Systems, Inc.

Contents: Illustrated catalog gives complete details of the "Quik-Set" safety steel scaffolding for above floor painting, wiring, machine repair, etc. Explains the construction that permits easy assembly and disassembly with only a few strong, light weight parts. Easy to store. 8 pages.

35—FEEDING OF EMPLOYEES

Mono Service Company.

Contents: Describes the successful canteen service used at Edw. G. Budd Manufacturing Company to feed their employees. The use of paper cups and plates is stressed, and sample record sheets kept by the counter attendants are shown. Photographs show the preparation and dispensing of the food. 8½" x 11", 16 pages.

36—RESINOX MOLDING MATERIALS

Monsanto Chemical Company.

Contents: Colorful book features "Resinox", a thermo-setting plastic compound based on phenolic resin. The text discusses the manufacture, molding, properties and uses of the plastic. Colorful pictures illustrate the various points. 16 pages.

37—ADJUSTABLE MULTI-SPINDLE DRILLS

The National Automatic Tool Co.

Contents: Explains all the features of the model B-2 general purpose, adjustable multi-spindle driller and tapper, designed to handle a wide range of medium sized work. Photographs show the use of the machine for several classes of work. Includes a table of spindle data, and complete specifications. 8½" x 11", 20 pages.

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For Low-maintenance Fluorescent Installations

...Make Sure the Ballasts are **G-E**



BALLAST DESIGN and construction are among the most important factors that affect the performance and economy of MAZDA F lamp installations. Poorly designed ballasts may result in early end-blackening of lamps, will frequently aggravate the effects of line-voltage variations, and can materially shorten lamp life.

For best lamp operation, with low maintenance, the electrical characteristics of the ballasts must be carefully co-ordinated with those of the lamps. In addition, the ballast-manufacturing processes must be rigidly controlled to obtain uniformity of characteristics in all units of the same rating.

Both of these requirements are met by the complete line of G-E ballasts for MAZDA F lamps. The designs of all ratings conform to the specifications of the lamp manufacturers. Uniformity is maintained by automatic winding of coils, silver soldering of all connections, machine assembly of core and coils, and by other advanced manufacturing methods. Depending on the type and rating, every G-E ballast receives from 7 to 10 tests during assembly.

Other low-maintenance features of G-E ballasts include:

1. Heat-resistant, AF cable used in all ratings up to 100 watts.
2. Capacitors used in G-E high-power-factor ballasts are filled with Pyranol—famous G-E liquid dielectric that will not burn.
3. Housings are die-made for strength and uniformity.

G-E ballasts are available for the complete range of MAZDA F lamps, 4 to 100 watts, inclusive. All G-E ballasts are listed by the Underwriters' Laboratories, Inc. All G-E Tulamp high-power-factor ballasts are certified by the Electrical Testing Laboratories. General Electric, Schenectady, N. Y.



**EXTRA ASSURANCE
OF HIGH QUALITY
IN G-E BALLASTS**

GENERAL ELECTRIC

408-3-5205

When writing General Electric please mention Purchasing

Yours

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38—FACTS ABOUT GRINDING

Norton Company.

Contents: All about grinding, presented in an interesting question and answer form. Describes all phases of grinding and tells all about modern grinding machines. Photographs and colored diagrams assist in clarifying the explanations of the text. Very educational book. 32 pages.

39—CLEANING MATERIALS

Oakite Products, Inc.

Contents: A 5-page illustrated article that explains how new cleaning materials and methods are successfully helping speed up shell production. Describes both mechanical washing machines and tank cleaning methods. Reviews the characteristics and qualities required of materials for this type of work.

40—LOCKNUTS

The Palnut Company.

Contents: Describes the features and uses of the Palnut type locknut, with its double locking action. The Locknut is shaped like a thin nut and is tightened with a wrench the same as a nut. 8½" x 10", 12 pages.

41—BOILER FEEDWATER TREATMENT

The Permutit Company.

Contents: Bulletin describes the supplementary treatment of boiler feed water, featuring the use of phosphate, sodium sulfite or sodium sulfate. The uses of each treatment are discussed and diagrams show various types of proportioning feeds. 8½" x 11", 12 pages.

42—PROTECTIVE COATINGS

Protective Coatings, Inc.

Contents: Describes the properties, uses and method of application of several materials designed for giving protective coatings to everything from small metal parts to building roofs. Book consists of a cover with 50 loose pages held by a clip, so that sections can be removed.

43—HYDRAULIC VISES

Studebaker Machine Company.

Contents: 6-page folder features the hydraulic "visepress", which is operated by foot controls and is actually a combination vise and press. Photographs and drawings show how the device operates and the various ways it can be used. Among its uses are press jobs, punching, bending, straightening, stamping and riveting.

44—INTERCOMMUNICATION SYSTEM

Talk-A-Phone Manufacturing Company

Contents: A four-page circular describes several types of intercommunication systems suitable for factory or office. Photographs of the master and sub-station equipment and diagrams showing the possibilities of each system.

45—RECORDING INSTRUMENTS

C. J. Tagliabue Mfg. Company.

Contents: Covers a complete line of temperature and pressure recording instruments. Illustrations show how these instruments operate and show many typical installations. Numerous accessories shown. Price lists are included as an insert. 8½" x 11", 28 pages.

46—CARBIDE CUTTING TOOLS

Tungsten Carbide Tool Co.

Contents: Gives complete specifications for 92 different types and sizes of carbide tools. Both steel-cutting and cast iron and non-ferrous cutting tool grades are given, with tips available in any of several materials. 4 page folder.

47—HOSE MANUAL

United States Rubber Company.

Contents: Describes and illustrates by cut-away drawings the following types of hose: steam, water, suction, air, oil and gasoline. Each page contains a "Helpful Hose Hint" on the care and use of hose. The book is in the form of an enlarged section of hose. 8 pages.

48—TOOLS AND BLANKS

Vascoloy-Ramet Corporation.

Contents: Lists 22 typical styles of single point tools, together with a grade selector chart giving recommended uses for the various grades of tools. Included are instructions for ordering tools and blanks, and tables for computing costs of standard tools and blanks as well as special blanks. 4½" x 10½", 28 pages.

49—TOOL AND WORK HOLDERS

Victor Machinery Exchange, Inc.

Contents: Description, specifications and prices of lathe chucks, universal dividing heads, magnetic chucks, machine vises, demagnetizers and high speed power saws. Large folded sheet.

50—AIR BRAKES FOR TRUCKS

Wagner Electric Corporation.

Contents: Features the design and operation of air brakes and all their accessories, for trucks and trailers. Diagrams show how complete systems are set-up and operate. Photographs of all parts.

51—ENGINEERING TABLES

The Watson-Stillman Company.

Contents: A very useful book containing nothing but engineering tables and information. Includes many formulas, capacities of hydraulic rams, strength of seamless steel pipe, conversion tables, specific gravities and weights and many other items. 8½" x 11", 12 pages.

52—INDUSTRIAL RESPIRATORS

Pulmosan Safety Equipment Corp.

Contents: A handy publication featuring many types of respirators designed for industrial use. Included are types giving protection against ordinary dusts, smoke, fumes, gas, sandblasting, silica, lead, fine dusts, and modified types giving eye protection. Useful information is given about gas concentrations.

PURCHASING 205 EAST 42ND ST., NEW YORK, N. Y.

I wish to receive the following LITERATURE:

NUMBERS _____

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

2/42

PLANTS THAT MUST BE BUILT FAST CAN BE BUILT FASTER with SKILSAW TOOLS!

NEW plants, enlarged plants, remodeled plants—they're needed *FAST* for America's victory... they're finished *FASTER* when SKILSAW TOOLS are on the job, speeding up building each hour of each day. *Are skilled hands scarcer? One hand with SKILSAW does the work of ten! Is time too short? SKILSAWS cut days from schedules... SKILSAW DRILLS punch holes in bottlenecks! Do you want proof? 9 out of 10 defense contractors use SKILSAW TOOLS! Ask your distributor for a demonstration.*

SKILSAW trims roof sheathing faster... after it is nailed in place to save extra time.

SKILSAW quickly cuts plywood panels... speeds up concrete form work... makes pocket cuts swiftly.

SKILSAW DRILL speeds up timber boring. Powerful, yet compact for drilling in close quarters.

SKILSAWS speed up all sawing in maintenance, remodeling and construction. Cut out old flooring... make pocket cuts in walls and floors for service pipes and ducts. Size and trim all lumber... cross-cut, bevel-cut, rip and groove. 9 Powerful Models.

SKILSAW DRILLS are as fast on maintenance and remodeling work as they are on production! Do all drilling from lightest lead holes for hardware and fixtures to heaviest boring in construction. Swiftly drill holes for all conduit and pipes. 22 Powerful Models.

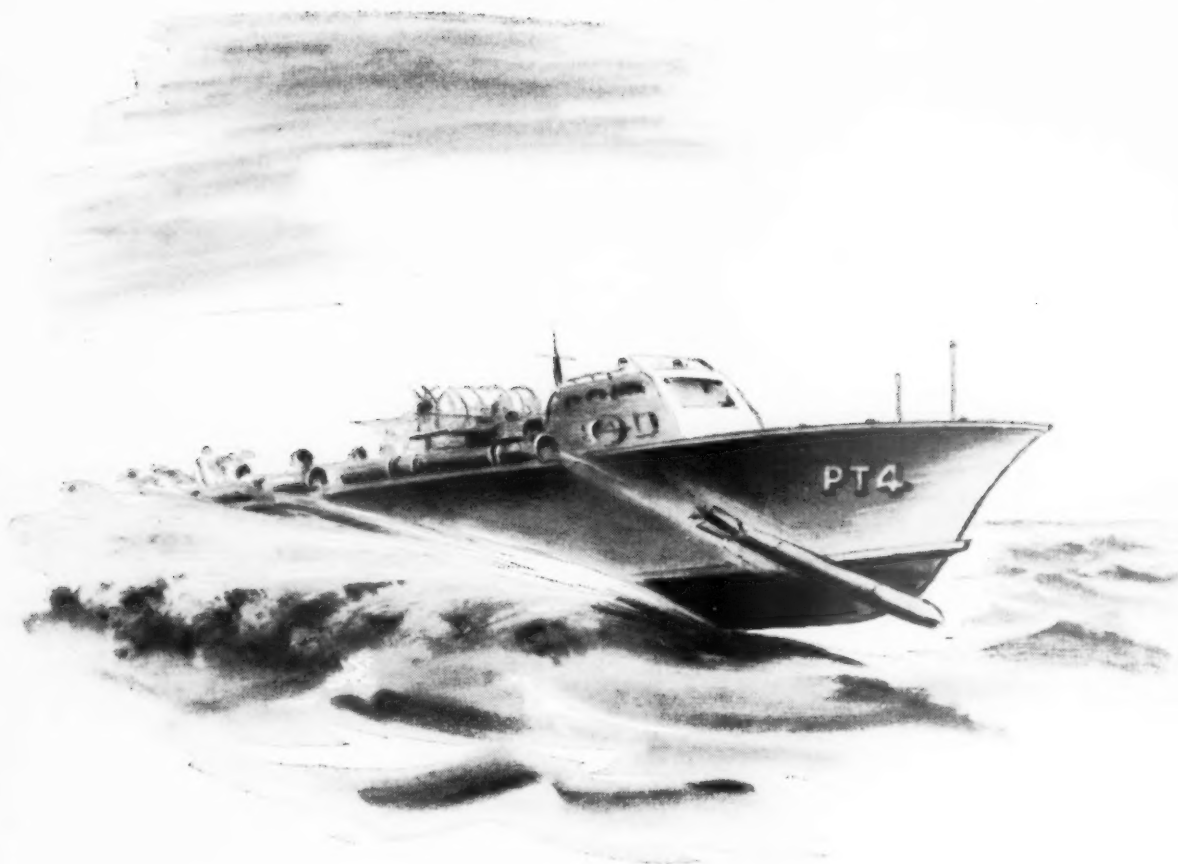
SKILSAW, INC., 5043 Elston Avenue, Chicago

New York • Boston • Buffalo • Philadelphia • Cleveland • Detroit • Indianapolis • St. Louis
Kansas City • Atlanta • New Orleans • Dallas • Los Angeles • Oakland • Seattle • Toronto, Canada

SKILSAW PORTABLE ELECTRIC **TOOLS**
★ FOR THE DEFENSE OF AMERICA ★

When writing Skilsaw, Inc. please mention Purchasing

Hell-bent-for-election



THESE flying water-seats were designed almost beyond the power of men to control. As it is, the men must be heavily padded, lashed to their positions, to take the pounding of terrific speeds in rough weather.

Every part of these mosquito boats from gun to galley has been specified and manufactured to withstand the hard use that make the boats a powerful weapon of attack.

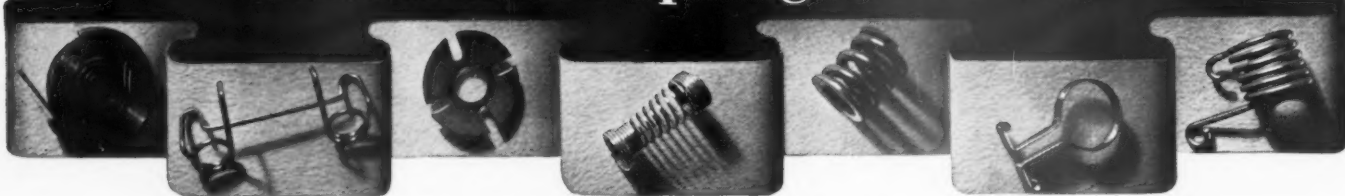
For rugged service in the heavy duty machines of war—and for delicate duty in the sensitive instruments of science go Barnes-made springs in endless streams from mass production lines, controlled by the engineering skill of veteran springmakers.

Wallace Barnes Company

DIVISION OF ASSOCIATED SPRING CORPORATION

BRISTOL, CONNECTICUT, U. S. A.

Barnes-made Springs *for Victory*



When writing Wallace Barnes Company please mention Purchasing

Belt Fasteners **HAVE A JOB TO DO!**

BELT FASTENING is a subject that is worthy of the most careful attention on the part of industry today. When transmission or conveyor belts fail today it means more than just the loss of time—it may mean the loss of a bomber in the Pacific because the arrival of a fighter plane was delayed just one more day.

We suggest a careful and complete check-up of all the belts in your plant. You may discover some practices that may cause a shortening of belt life or an actual loss of machine hours. In many check-ups that have already been made we have found that:

1. Quite often the fasteners are too large or too small for the thickness of the belt.
2. Steel fasteners are frequently used under conditions where higher priced alloy fasteners of Monel or Everdur would cost less in the long run.
3. Often times wide transmission belts are joined with two or more short sections of lacing when long sections of correct length for width of belt are not only easier to apply but also make a more uniform and longer lasting joint.
4. Some material handling conveyor belt joints are not "water tight" permitting materials to sift through.
5. Holes and rips in many conveyor belts are not being properly patched and repaired to give full service life.

In making an analysis of belt fastening practice we have two bulletins that will be helpful to the men handling Belt Maintenance in your plant.

BULLETIN A-60 shows how to handle the lacing of flat belts up to $\frac{3}{8}$ " thick with Alligator Steel, Monel and Everdur belt lacing. Tells what kind of lacing to use for different services and gives list prices on long lengths up to 96". Every purchasing department and belt maintenance man should have a copy.

BULLETIN F-100 shows how to make "water tight" butt joints in conveyor belts with Flexco HD belt fasteners. Also shows the various types of rips and patches that can be handled with these fasteners and with Flexco HD rip plates. Lists fasteners made of steel, "Monel", "Everdur" and "Promal." The use of these fasteners has increased tremendously and if you use conveyor belts from $\frac{1}{4}$ " to $1\frac{1}{2}$ " thick you will want this bulletin.

[Alligator Steel Belt Lacing and Flexco HD Belt Fasteners are sold through Supply Jobbers everywhere. These Supply Houses will be glad to see that you are supplied with these bulletins or we will mail copies if more convenient.]

FLEXIBLE STEEL LACING CO., 4697 Lexington St., Chicago, Ill.



ALLIGATOR
TRADE MARK REG. U.S. PAT. OFFICE
STEEL BELT LACING

and

FLEXCO HD
REG. U.S. PAT. OFFICE
BELT FASTENERS

When writing Flexible Steel Lacing Co. please mention Purchasing



SEE IF LYON

Can Make It

These shapes represent typical jobs our two big metal working plants are taking in stride. We hope they will bring home to every plant making armament that requires units or parts of units fabricated from No. 10 to No. 24 gauge metal, the desirability of investigating our facilities for producing such parts.

Lyon's two big modern plants are organized for 24-hour operation. Plant facilities include shears, punch presses, double crank presses, power brakes, spot, arc and gas welders, baking ovens, washing machines, dip tanks, spray equipment, etc., occupying over half a million square feet of plant area. Modern toolrooms in each plant are capable of producing necessary dies and jigs to service all production equipment. See what Lyon can make to help you speed up the job of keeping 'em rolling, flying and shooting.

LYON METAL PRODUCTS, INCORPORATED

General Offices: 3302 Madison Avenue, Aurora, Illinois

Sales and District Offices Manned by Experienced Engineers in All Principal Cities

GET ALL THE FACTS: This comprehensive brochure has been prepared to simplify the task of determining where Lyon facilities can be used to best advantage in accelerating armament production. A copy is yours for the asking.

LYON METAL PRODUCTS, INCORPORATED

When writing Lyon Metal Products, Incorporated please mention Purchasing

HOW TO LIVE to a ripe old age...



Perfect balance! . . . It's the secret of long life to the aerialist *and the ball bearing*. That is why ball size, race depth and ring thickness were so carefully juggled in the Fafnir Balanced Design, until each was brought to the proper point for maximum performance.

Deeper races; larger balls; ring thickness adequate for strength . . . they're bound to give you greater radial and thrust load capacity . . . assurance that any ball bearing you select from "the balanced line" will perform to a ripe old age. The Fafnir Bearing Company, New Britain, Connecticut.

DEEP RACES

HEAVY RINGS

LARGE BALLS

FAFNIR
Ball Bearings

THE BALANCED LINE
MOST COMPLETE IN AMERICA

When writing The Fafnir Bearing Company please mention Purchasing



As dependable a work-
and-time saver as the
famous **RIDGID** wrench

Quicker
easier threading of
small pipe with this
RIDGID No.00R

For instance, fast change of die heads: in No. 00R they lock in or release by pull of ratchet knob; in Nos. OR and 11R they push out easily, snap in from either side, but can't fall out. No bother with special dies for close-to-wall threads: regular $\frac{1}{8}$ " to $1\frac{1}{4}$ " tool steel dies reverse easily; are quickly removed for re-grinding, cut smooth accurate threads. Rugged all-steel and malleable-alloy tools, extra long service, a pleasure to use. Conduit dies on order, handy carrier with complete sets—no extra cost. Try them at your Supply House.

RIDGID 3-Way Threaders



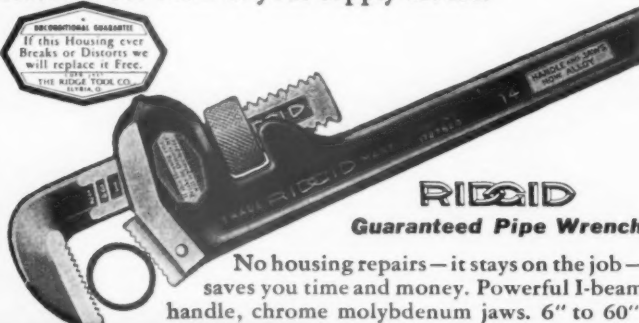
Same speedy convenience as small ratchet threaders described above—dies reverse for close-to-wall threads, remove easily for regrinding. . . . No. 30A threads $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{3}{4}$ "; No. 31A, $\frac{1}{2}$ ", $\frac{3}{4}$ " and 1".

All **RIDGID** Pipe Tools are
sold only through Supply Houses



.... You will like this
handier, more efficient
RIDGID Pipe Vise

Like all **RIDGID** Tools, this bench yoke vise gives you a lot more in service and convenience than mere pipe holding. LonGrip jaws protect nickel pipe, grip more firmly for easier work, aided by the built-in pipe support. There's a handy pipe bender. Frame is of strong special malleable metal, jaws of highest quality tool steel, scientifically hardened for firm grip and long wear. Full line of bench, post, kit and stand vises, yoke and chain patterns, all with work-saving features. See them at your supply House.



RIDGID
Guaranteed Pipe Wrench

No housing repairs—it stays on the job—saves you time and money. Powerful I-beam handle, chrome molybdenum jaws. 6" to 60".

RIDGID

Pipe Wrenches, Cutters, Threaders, Vises

THE RIDGE TOOL COMPANY
ELYRIA, OHIO, U. S. A.

Work-Saver Tools for America's Big Job in 1942

When writing The Ridge Tool Company please mention Purchasing

INSTALL **ONE unit . . . DO 4 jobs**

**WITH WESTINGHOUSE
COMBINATION LINESTARTERS
for a-c motor circuits**



Westinghouse Nofuze Circuit Breaker

1

ACTS AS MANUAL DISCONNECT SWITCH.
Locking arrangement permits padlocking cabinet closed and switch in off position. Eliminates need for separate switch. "De-ion" arc quenching protects contacts.

2

PROTECTS CIRCUIT AGAINST OVERLOADS.
Bi-Metal gives positive protection against short circuits and severe overloads . . . does away with need for fuse equipment. Unvarying — factory-calibrated — self-indicating.

Westinghouse "De-ion" Linestarter

3

GIVES MAGNETIC ACROSS-THE-LINE STARTING. Permits operating motors by push button, float or pressure switch. Contacts opened and closed by direct-acting, vertical solenoid magnet. "De-ion" arc quenchers protect contacts.

4

PROTECTS MOTOR AGAINST OVERLOADS.
Bi-Metal relay calibrated to protect motor permits momentary overloads as in starting, but protects motors from sustained overloads.

Save wiring—save time—save space! This single "package" contains everything you need for the motor circuit in one compact, easily installed enclosure.

Westinghouse Combination Linestarters combine the advantages of Nofuze Circuit Breakers and "De-ion" Linestarters. They eliminate delays for fuse replacements, and simplify the job of providing proper control and protection for motor circuits. Specify them . . . install ONE unit—and do FOUR jobs! Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. J-21186-A

Size 1 Combination
Linestarter, Class 11-206



Westinghouse



SUPERIORITY in the air—
America is achieving it! Wit-
ness this new 70-Ton Flying
Battleship for the U. S. Navy,
which has 200-ft. wing
spread and will transport
150 fighting men.

In This War of Machines **SUPERIORITY** is Vital!

MODERN FIGHTING EQUIPMENT—the finest the world has ever seen—will, in due time, bring victory to America's armed forces. Victory will come with **SUPERIORITY** in the air, on land, and on the seas.

But modern industrial equipment must first provide this **SUPERIORITY**—must first win the crucial battle of production.

*HOWELL is proud of its role in this production battle—proud of our ability to furnish war plants with motors of proved **SUPERIORITY**. Take for example the new **HOWELL Standard Motor** here illustrated . . . frame and base non-breakable; no working part*



exposed; windings moisture-proofed and heavily insulated; rotors dynamically balanced to close limits; completed motors precision tested.

If you are engaged in essential production, **HOWELL Motors** can help you make good.

HOWELL ELECTRIC MOTORS COMPANY
HOWELL, MICHIGAN . . . *Representatives in All Principal Cities*

RARIN' TO GO!

**WELL BALANCED BY...
LEWIN-MATHES SHELL BANDS**
of pure copper or gilding metal

Our own electrolytic copper refinery within the same plant insures adequate material.

Lewin-Mathes copper tubing in coils and straight lengths is also available for other defense purposes.

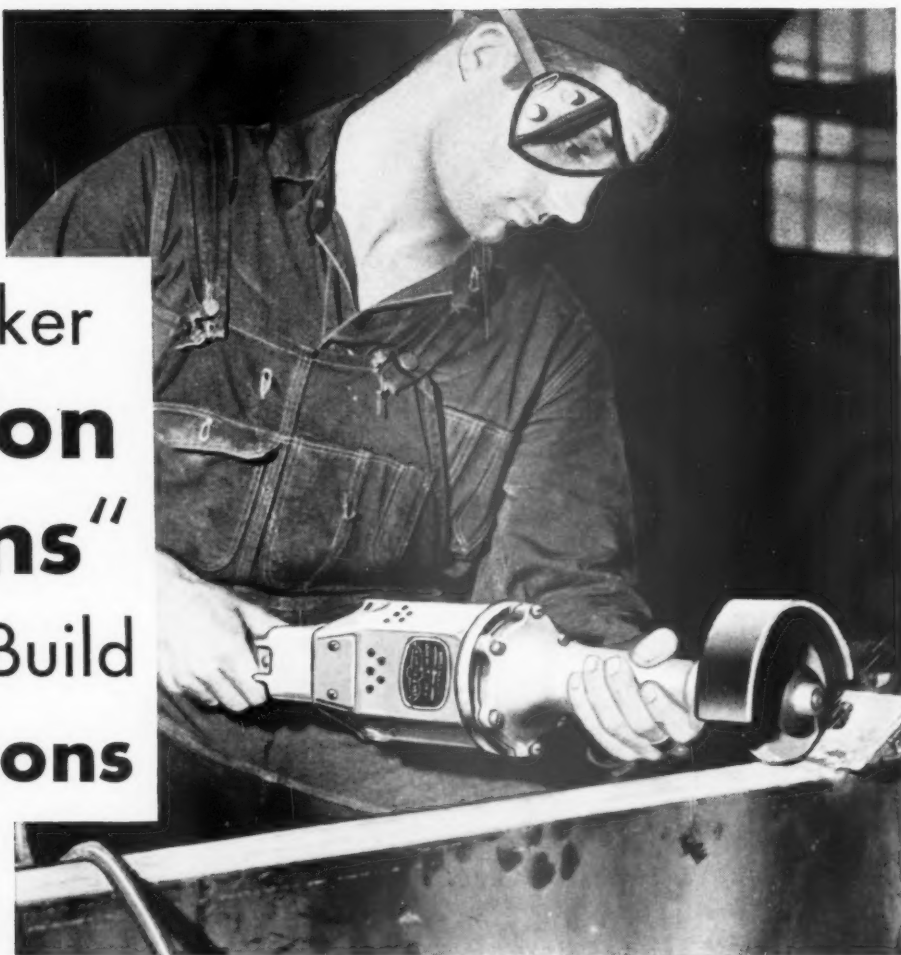
WE CAN MAKE PROMPT DELIVERY

LEWIN  MATHES

LEWIN-MATHES COMPANY • • EAST ST. LOUIS, ILLINOIS

When writing Lewin-Mathes Company please mention Purchasing

Black & Decker Production "Weapons" Help Industry Build War Weapons



SMOOTHING WELDED JOINT with powerful Black & Decker Portable Electric Grinder. Here's the high-speed method of grinding, cleaning, and polishing armament assemblies.



DRILLING PLANE NACELLE with famous Black & Decker HOLGUNS. These compact, powerful Electric Drills are helping to roll out planes from every leading aircraft plant.



SPEEDING UP AUTOMOTIVE ASSEMBLY with Black & Decker Electric Nut Runner. B & D Screw Drivers and Nut Runners handle every type assembly, from instruments to tanks.

DAY and night, Black & Decker Tools are helping assembly lines rush planes, ships, tanks and guns to the firing lines. As the production battle rolls on, industry will demand more and more electric tools for drilling, grinding, sanding, cutting and assembling operations. Black & Decker *will build them* in abundance. And industry knows it can depend upon Black & Decker Tools for the power, speed and stamina to keep going when the going is toughest.

To help busy production men, Black & Decker offers experienced advice on tooling up, through its nation-

wide field force . . . a convenient and informed source of supply, through leading distributors in all principal cities . . . and prompt repair and parts service to minimize delays, from 26 Factory-owned Branches located coast-to-coast. Phone your jobber to demonstrate the exact type and capacity Black & Decker Electric Tools you need—or wire for a factory representative's advice.

FREE! 1942 Catalog—Right off The Press



SEND for your Free copy of Black & Decker's complete catalog, describing over 100 Electric Tools for production, construction and plant maintenance. Write: The Black & Decker Mfg. Co., 764 Pennsylvania Ave., Towson, Md.

LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker

PORTABLE ELECTRIC TOOLS

When writing The Black & Decker Mfg. Co. please mention Purchasing

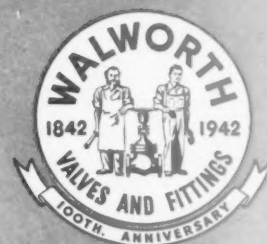
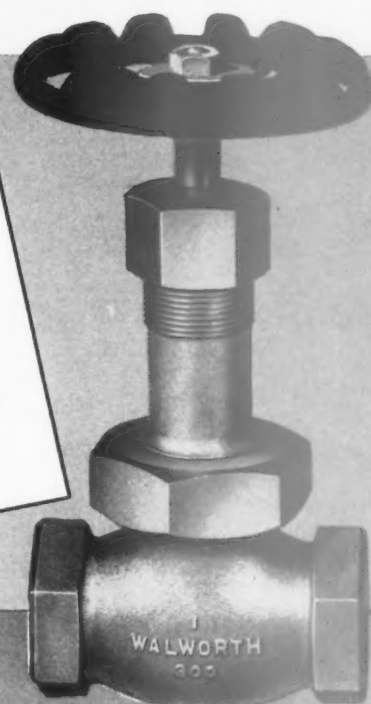
15 MINUTES RE-GRINDING...NOW!

MAY DOUBLE THE USEFUL LIFE OF THAT VALVE

Today, more than ever before, it is important to get the longest possible life from every valve. Walworth is publishing this simplified method of re-grinding in the hope that it will enable customers to prolong the useful life of their valves. It is important that your valves be re-ground as soon as a leak, however small, is discovered.

Continued use without attention may result in a cut so deep that it cannot be removed by grinding. Walworth Re-grinding Valves are designed to be re-ground without removing the body from the pipeline.

Before taking the valve apart, empty the pipeline. This may be done by closing the next valve on the upstream side. Unscrew the union bonnet ring and lift the bonnet assembly.



THIS IS OUR CENTENNIAL YEAR

This year marks the 100th Anniversary of the founding of our company, and we had a nice series of "institutional" ads in mind to tell you about it. We hope you saw the first one, which appeared in the January trade publications. Needless to say, that ad was prepared before December 7, 1941, and things have happened since then.

Advertising is conceded to be the most economical means of telling a message to the greatest number of people, and in this period of Priority Production we feel that it is the duty of Walworth advertising to cooperate in a national program of Salvage, Simplification, Specification, and Substitution.

So we've scrapped the "institutional" ads we had planned for our centennial year, and present a series of ads which we think will help valve and fitting users get more service from their existing Walworth material and thereby permit the output of our five plants to be used to the best advantage for Victory in the great national effort.



1 Place a pin or nail through the hole in the lower portion of the stem. This hole will be discovered by revolving the disc until the slot in the disc locknut is directly over the hole. With this pin in place the disc and stem are locked together.



2 Apply grinding compound to disc and seat with finger. It is recommended that a grinding compound with an emery base be used.



3 Place bonnet assembly in the body. Hold the bonnet and revolve the hand wheel until the disc touches the seat and until the bonnet is raised about 1/32 inch from the body.



4 Screw on union bonnet ring to hand tightness and then back off about one turn. Oscillate the hand wheel with one hand, meanwhile holding the union bonnet ring firmly to keep it from turning.



5 After pitted surfaces are ground smooth, wipe seat and disc with a cloth that has been dipped in gasoline—be sure all grinding compound is removed from the parts.



6 IMPORTANT! Remove pin from hole in shaft before reassembling valve.

WALWORTH

WALWORTH COMPANY
60 EAST 42nd STREET, NEW YORK

VALVES
FITTINGS
and TOOLS

Backed by 100
Years' Service

DISTRIBUTORS IN PRINCIPAL
CENTERS THROUGHOUT THE WORLD

Answers to Problems

BOTHERING MEN LIKE YOURSELF

Graton & Knight Distributors are eager to do everything they can to help you "get out the goods." Defense authorities have listed seven big problems of purchasing managers—here are our answers to those problems.



1 Are delivery delays driving you frantic?

Your distributor can often cut down waiting time by shipping from stock or ordering from special sources.

A survey of Research Leather Belting distributor stocks is encouraging, and G & K's plant production schedule is aimed to keep up with current demand.



2 Are you handicapped by scarcity of new machines?

Perhaps you can make better use of older (even retired) machines and equipment. Modernizing with a *Research belt-pivoted motor base drive* is one way to increase production.

Used leather belting can be rebuilt by your Graton & Knight Distributor. At small cost, you get a bonus of extra service.



4 Are your production facilities falling behind demand?

Using best-quality supplies and determining proper specifications will step up production. Your distributor has the products and can save you time figuring out the specifications.

Shutdowns for belt takeup can be minimized by using Research Leather Belting — permanent stretch is removed during manufacture.



5 Are shutdowns plaguing your production line?

Taking advantage of up-to-date maintenance methods and adhering to a definite routine of inspection will almost completely eliminate unexpected shutdowns that delay production.

Research Belt Dressing, applied regularly to your belts, will reduce slippage and greatly prolong life. Ask your Graton & Knight Distributor.



6 Are you over-burdened with paper work?

A great many items can be obtained more easily through your distributor. Bulk all the orders you can — save time in ordering, following and accounting.

Graton & Knight's new catalogs have been praised by purchasing men for their easy-to-find information.

GRATON & KNIGHT COMPANY

WORCESTER, MASSACHUSETTS

Only leather belting manufacturer with complete nationwide service facilities

lat L
oun
lat L
eath

These Graton & Knight Distributors can help you contribute maximum production for defense. Call upon them.



3 Do delivery dates on special equipment leave you hopeless?

Try to use "standards" wherever you can. Your distributor may know of ways whereby a slight change in specifications will enable you to get quicker service. Many firms are doing this today.

Use leather belts and standard flat pulleys, and you won't have to wait for special sheaves and rubber V-belts.



7 Is your plant pushed beyond capacity?

Give your distributor an idea of your problem. Very likely, he knows of nearby firms, previously making non-defense products, who could help you out on a sub-contract basis.

It's the distributor's job to know what his customers need. Make use of his familiarity with the production capacity in your territory.

ALABAMA

Birmingham — The Young & Vann Supply Co.
Mobile — McGowin-Lyons Hdwe. & Supply Co.

ARIZONA

Kingman — Tarr, McComb & Ware Commercial Company
Phoenix — Pratt-Gilbert Hardware Company
Tucson — Albert Steinfeld & Company, Inc.

ARKANSAS

Helena — Lewis Supply Co.
Pine Bluff — Arkansas Mill Supply Co., Inc.
Texarkana — Buhrmann-Pharr Hardware Company

CALIFORNIA

El Centro — Imperial Hardware Co.
Los Angeles — Frey Industrial Supply Co.
Oakland — Bay City Iron Works
San Francisco — Honolulu Iron Works Co.

CONNECTICUT

Bridgeport — Hunter & Havens, Inc.
New Haven — The Page, Steele & Flagg Company
Plainville — Ideal Machinery Co.
Stamford — The Geo. W. Southwick Co.
Waterbury — The White Supply Co.

DISTRICT OF COLUMBIA

Washington — National Equip. & Supply Company

FLORIDA

Jacksonville — The Cameron & Barkley Co.
Miami — The Cameron & Barkley Co.
Tampa — The Cameron & Barkley Co.

GEORGIA

Atlanta — Fulton Supply Co.
Columbus — Columbus Iron Works Co.
Rome — Battery Machinery Company

ILLINOIS

Chicago and Moline — Sterling Products Company, Inc.
Decatur — The Field & Shorb Co.
Quincy — E. Best Pibg. & Htg. Supply Co.

INDIANA

Indianapolis — Van Camp Hardware & Iron Co.

IOWA

Des Moines — Globe Machinery & Supply Co.

KANSAS

Leavenworth — Great Western Mfg. Co.

KENTUCKY

Louisville and Lexington — Tafel Electric & Supply Co.
Paducah — Henry A. Petter Supply Co.

LOUISIANA

Monroe — Weeks Supply Company, Ltd.
New Orleans — Standard Supply & Hdwe. Company, Inc.

MAINE

Portland — W. L. Blake & Company

MARYLAND

Baltimore — The L. A. Benson Company, Inc.
Salisbury — The R. D. Grier & Sons Co.

MASSACHUSETTS

Fall River — Harold F. Wordell
Holyoke — J. Russell & Co., Inc.
Lowell — The Fairgrieve Belting Co., Inc.
New Bedford — Manufacturers' Supply Company, Inc.
Taunton — The Pierce Hardware Co., Inc.

MICHIGAN

Battle Creek — Kendall Hdwe. & Mill Supply Company
Escanaba — Delta Hardware Co.
Houghton — I. E. Swift Company
Lansing — Michigan Supply Co.
Marquette — Soo Marquette Hardware Company
Menominee — Northern Hdwe. & Supply Company
Sault Ste. Marie — Soo Hardware Company

MINNESOTA

Duluth — Kelley-How-Thomson Co.

MISSOURI

Kansas City — H. R. Williams Mill Supply Co.
St. Joseph — Jamieson Machine Company

NEBRASKA

Omaha — American Machinery & Supply Company

NEW HAMPSHIRE

Keene — M. S. Perkins Machine Co.

NEW JERSEY

Newark — Dodge-Newark Supply Co., Inc.
Passaic — New Jersey Eng. & Supply Company

NEW YORK

Buffalo — Weed & Company
Elmira — Barker, Rose & Kimball, Inc.
Lockport — Ward Brothers Mill Supply Co., Inc.
Newburgh — W. L. Smith
Rochester — Haverstick & Company, Inc.
Troy — Fred K. Blanchard, Inc.

NORTH CAROLINA

Charlotte — The Textile Mill Supply Co.

OHIO

Akron — The Hardware & Supply Co.
Cincinnati — The Scallan Supply Co.
Cleveland — The Geo. Worthington Co.
Columbus — The Smith Bros. Hardware Company
Dayton — Dayton Industrial Supply Co.
Mansfield — The Hughes Supply Company

OREGON

Klamath Falls — Lorenz Company
Portland — Harris Supply Company

PENNSYLVANIA

Allentown — William H. Taylor Co., Inc.
Pittsburgh — Somers, Fittler & Todd Co.
Reading — Brown Engineering Company
Scranton — The Chas. B. Scott Company
York — George F. Motter's Sons

RHODE ISLAND

Providence — W. E. Lamarine

SOUTH CAROLINA

Charleston — The Cameron & Barkley Co.
Greenville — Hugh Black

TENNESSEE

Jackson — Southern Supply Company
Knoxville — Tennessee Mill & Mine Supply Co.
Memphis — Lewis Supply Company
Nashville — Keith, Simmons Co., Inc.

TEXAS

Dallas — The Murray Co.
El Paso — Morsen-Dunnegan-Ryan Co., Inc.
Houston — Peden Iron and Steel Company

UTAH

Salt Lake City — The Salt Lake Hdwe. Co.

VERMONT

Burlington — Hagar Hdwe. & Paint Co.

VIRGINIA

Lynchburg — Barker-Jennings Hdwe. Corp.
Newport News — Noland Company, Inc.
Norfolk — Taylor-Parker Company, Inc.
Richmond — Smith-Courtney Company
Roanoke — Noland Company, Inc.

WASHINGTON

Aberdeen — Mill & Logging Supply Co.
Seattle — Chas. H. Harden Co.
Spokane — Washington Machinery & Supply Co.
Tacoma and Olympia — Ducharme Belting Co.
Yakima — Yakima Hardware Company

WEST VIRGINIA

Elkins — Valley Supply Company
Fairmont — Fairmont Supply Co.
Huntington — Banks-Miller Supply Co.

WISCONSIN

Eau Claire — W. H. Hobbs Supply Co.
Green Bay — Morley-Murphy Company
Milwaukee — Mormon Belting & Supply Company
Racine — Mohr-Jones Hardware Co.
Sheboygan — Frank Geele Hdwe. Co.
Wausau — D. J. Murray Mfg. Co.

GRATON
&
KNIGHT

Lat Leather Belting
Round Leather Belting
Lat Leather Link Belting
Leather V Belting
Belt Dressings
Belt Cements
Lace Leather
Leather Packings
Textile Leathers

A million times a week

EMERSON PROVES THE VALUE OF PARKER-KALON QUALITY-CONTROL

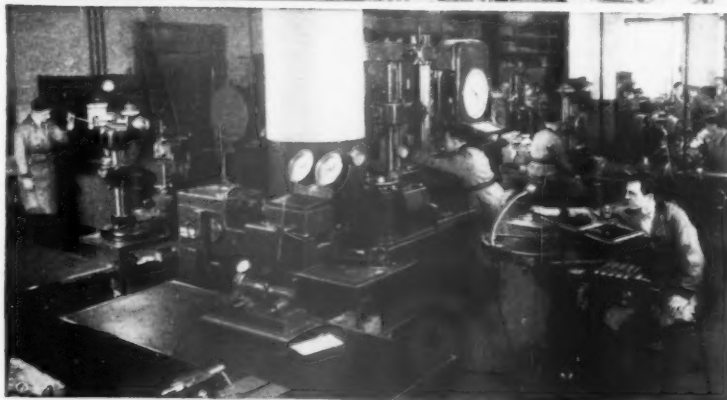
"DURING a busy week, we often use more than a million Parker-Kalon Self-tapping Screws", says Emerson's* engineer. "We've tried others, but always found good reason to prefer Parker-Kalon... they drive easier, with less torque and less wear on driver bits... and our punishing 'shake' tests show that they stay in tight!"

The sure, trouble-free performance of a hundred or a million Parker-Kalon Self-tapping Screws is the result of rigid laboratory control of quality. Every safeguard is taken to protect you against "doubtful screws"... screws that look all right but some of which fail to work right.

Parker-Kalon Quality-Controlled Self-tapping Screws put an end to "slow-ups"... you can start every P-K Screw quickly and easily, and count on it to hold! Trouble-free performance boosts the time-and-labor savings obtainable with Self-tapping Screws. "Doubtful Screws" rob you of part of the benefits you get by eliminating tapping... or fumbling with bolts and nuts... or riveting in hard-to-get-at places... or inserts in plastics.

No matter what material you're assembling—sheet metal, heavy steel, die cast metal or plastics—there's a type of Parker-Kalon Self-tapping Screw—thread-cutting and thread-forming—that will save time and money on the job. Parker-Kalon Corp., 202-204 Varick Street, New York.

* Emerson Radio & Phonograph Corp.



P-K QUALITY-CONTROL ELIMINATES "DOUBTFUL SCREWS"

This Parker-Kalon Quality-Control Laboratory is without counterpart in the screw industry. Through unequalled testing and analytical facilities it exerts rigid control over the quality of every screw produced. Not one detail is overlooked. Parker-Kalon Quality-Control is your complete assurance that every P-K Screw you use—the first or the millionth—is as good as modern science and manufacturing methods can make it.

SOLD ONLY THROUGH RECOGNIZED DISTRIBUTORS

PARKER-KALON

Quality-Controlled

SELF-TAPPING SCREWS

Give the Green Light to Defense Assemblies



SELF-TAPPING SCREWS FOR EVERY METAL AND PLASTIC ASSEMBLY... AND OTHER FASTENING DEVICES

When writing Parker-Kalon Corp. please mention Purchasing

SEE HOW YOU SAVE TIME

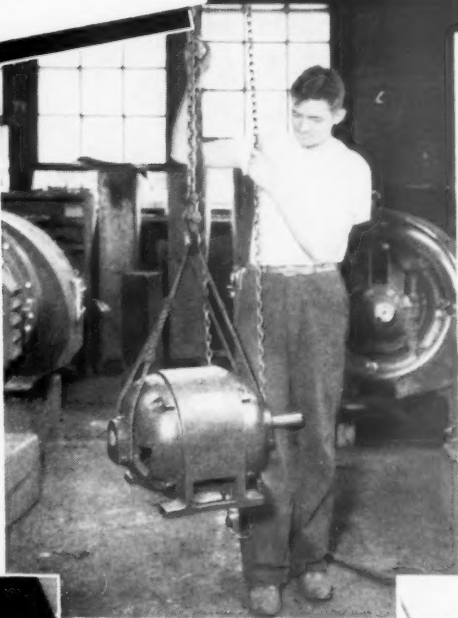
WITH THE **TRI-CLAD** MOTOR

REG. U. S. PAT. OFF.

Extra Convenience Features
help you get the Tri-Clad motor into service faster—keep it in service with less attention.

1. Easy to Handle

They can be moved into position easily because of their light weight and compactness. The shape of the bearing housings and the location of end-shield fittings make it easy to handle Tri-Clad motors with slings. In addition, they are sturdily built and do not have to be coddled.



2. Quickly Mounted or Altered

Their feet are machined accurately and drilled for standard mounting bolts. The reversible stator puts the roomy conduit box on the most convenient side and the end-shields can be rotated to meet any of four positions to meet mounting requirements.



3. Easy to Wire

A large, four-position conduit box gives unrestricted working space. It can be quickly removed for wiring. Flexible leads are pressed on the terminals which are permanently identified. No soldered connections are necessary. A stainless-steel, graphic connection plate is conveniently located on the conduit-box side of the motor.



4. Convenient to Lubricate

All Tri-Clad motors have a large oil or grease capacity. On sleeve-bearing motors, the oil-filler gage can be located on either side of the bearing housing. A spring cover on this gage permits quick checking of the oil level. On ball-bearing motors, a pressure-relief greasing system assures rapid and thorough greasing.



BUILT FOR PROTECTION FIRST ... TO LAST

Extra Protection 3 Ways

HELPS ASSURE LONG SERVICE LIFE

Production interruptions are avoided and operating time is saved when the motor you buy can stand up under the many adverse operating conditions commonly found in industry. Tri-Clad motors meet these conditions with—

1. Extra Protection against physical damage
2. Extra Protection against electrical breakdown
3. Extra Protection against operating wear

The new General Electric Tri-Clad motor is a cinch to install. Its convenience features pay off in precious minutes saved—both for those who build motors into machines and for those who use them in a plant.

Next time you order motors, take *time-saving* into account, along with protection and performance; make sure you get Tri-Clad motors—now available in a wide range of types and integral horsepower sizes to 20 hp.

Write for Bulletin GEA-3580 which gives full details about these extra protection features and other Tri-Clad motor advantages.

GENERAL  ELECTRIC

750-81-8038



**... America's biggest
"insulation" job!**

IT is really an insulation job that faces America today—insulating Democracy against Dictatorship.

With this goal the Keasbey & Mattison Company is in full and enthusiastic accord. We like what is called the "American Way," its concern for the freedom of the individual, its aspirations for a peaceful world.

It is only natural, then, that the Nation has first call on K&M plants and employees. Our whole

productive capacity has been dedicated to the cause of defending Democracy.

While working at top speed, we are not forgetting that the future will bring demands for improved asbestos products . . . and new products too. Our engineers and research men are working now on better materials for tomorrow.

Perhaps you can assist us. In what way can asbestos make your work easier or help solve some particular difficulty? Any sugges-

tions will be carefully considered in the hope that they will prove practical from a manufacturing standpoint. We'd appreciate a letter from you.

* * *

*Nature made asbestos;
Keasbey & Mattison has made it
serve mankind . . . since 1873.*

KEASBEY & MATTISON
COMPANY, AMBLER, PENNSYLVANIA

When writing Keasbey & Mattison Company please mention Purchasing



QUALITY CUTTERS PROVE THEIR WORTH

SERVING TODAY'S URGENCY

—They "stand up" under fast speeds and feeds...and give maximum performance

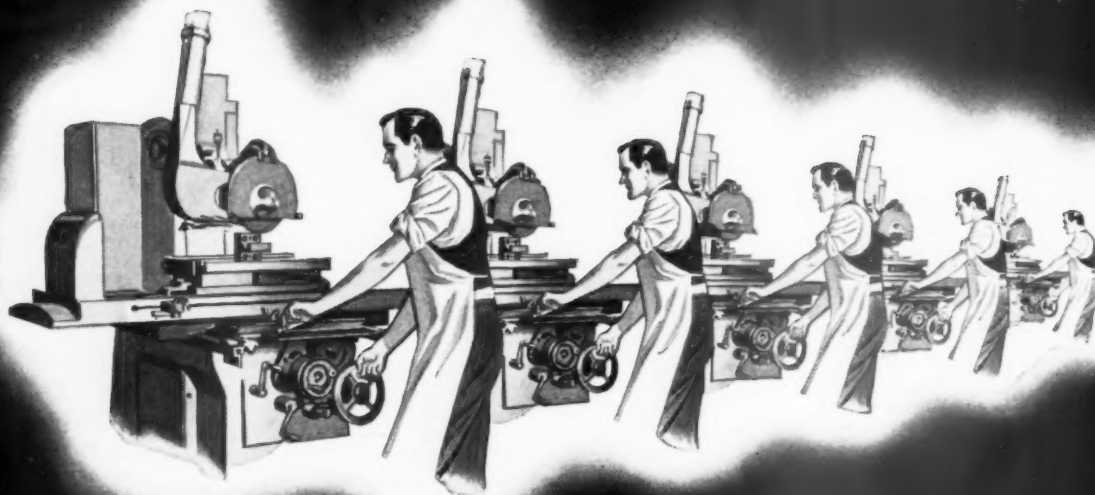
Plain Milling Cutters
Side Milling Cutters
Inserted Tooth Cutters
Spiral End Mills
Key Seat Cutters
T Slot Cutters
Shell End Mills
Angular Cutters
Convex and Concave Cutters
Corner Rounding Cutters
Metal Slitting Saws
Rotary Shears
Screw Slotting Cutters
Sprocket Wheel Cutters
Ground Formed Cutters
Gear Cutters



Catalog on request
Brown & Sharpe Mfg. Co.
Providence, R. I., U. S. A.

BROWN & SHARPE CUTTERS

**2 TO 5 TIMES
MORE PRODUCTION
PER MAN PER MACHINE**



Courage to try a new Grinding Wheel may solve your labor and machine shortage now

AT THIS CRITICAL TIME in war production, Radiac comes to your aid with a new type of precision grinding wheel. This new wheel, called Por-os-way, is different from any wheel you have ever tried before.

Properly used it takes deeper cuts, breezing through .010" or more. It grinds 100 to 400% faster, increasing production per man per machine 2 to 5 times. But that's not all. Por-os-way shows little tendency to load or burn the work. Here's the reason. Por-os-way is made by a new patented process. The structure, instead of being "sandy" and com-

pact is "stringy" and porous—something like a sponge. Millions of air cells allow the air to keep every grinding contact cool. Yet Por-os-way is hard, tough, holds the corner and requires very little dressing—due to a new vitrified bond.

Por-os-way grinds hard alloys with ease; copper, aluminum, wood, rubber, plastics and other soft materials with minimum loading. See this wheel. Try it and learn how much faster and cooler it grinds. Write today for a trial demonstration on your machines. A. P. DE SANNO & SON, INC., 438 Wheatland Street, PHOENIXVILLE, PENNSYLVANIA.

POR-OS-WAY* *a new* **RADIAC*** PRODUCT



Copyright 1942 by A. P. DE SANNO & SON, INC.

4 REASONS WHY

LINK-BELT CAST TOOTH SPROCKETS

LAST LONGER!

1...TEETH

are of proper shape—cast accurately and ground to fit the chain correctly.

2...RIM

is true and rigid to withstand the impact and shock of heavy service.

3...ARMS

are proportioned to give the necessary strength without excessive weight.

4...HUB

is right diameter and length, precision bored for easy application.

Order Link-Belt sprockets. They are built for endurance and will cut your maintenance and replacement costs. Write for complete information.

LINK-BELT PRODUCTS INCLUDE: Chains and Attachments of all types—Malleable Iron, Promal or Steel . . . Elevators and Conveyors of all types . . . Crawler Cranes . . . Locomotive Cranes . . . Coal and Ash Handling Equipment . . . Automatic Coal Stokers . . . Vibrating Screens . . . Car Spotters and Haulage Systems . . . Water-Intake Screens . . . Roto-Louvre Dryers and Coolers . . . Portable Belt Conveyors and Bucket Loaders . . . Silverstreak Silent Chain Drives . . . Silverlink Roller Chain Drives . . . P.I.V. Gear and V.R.D. Variable Speed Transmissions . . . Speed Reducers . . . Sprockets . . . Gears . . . Pulleys . . . Couplings . . . Clutches . . . Friction Fighter Ball and Roller Bearing Units . . . Babbitted Bearings . . . Base Plates . . . Shafting, etc. Send for General Catalog No. 800.

LINK-BELT COMPANY

Chicago, Indianapolis, Philadelphia, Atlanta, Dallas, San Francisco, Detroit, Boston, Seattle, Los Angeles, Portland, Ore., Toronto. Other offices and distributors in principal cities.

8005-J



When writing Link-Belt Company please mention Purchasing

Are you one of the 25,000 new executives?

It has been estimated that that many changes have been made in Industry in the past few months. Maybe you have taken on new purchasing responsibilities.

Here's a suggestion . . . when purchase requisitions pile up on your desk . . . when it looks as if you'll be "all in" from going "all out," do this:

Pick out the requisitions for Power Bits and Hand Drivers for Phillips screws, and hand them over to your assistant. Tell him—or her—to order from the new APEX Catalog No. 15, it'll be a cinch for him to do—and it will save your time. Then, too, you'll know that you are getting Power Bits and Drivers that will reflect in performance your good judgment in buying.

There'll be no holler from the Production Departments, unless it is for "more of those good APEX Power Bits."

If you don't know the APEX story, let us tell you. Send for APEX Catalog No. 15 . . . it is in the interest of better and greater production—every Buyer and Specifier should have it.

APEX POWER BITS and Hand Drivers

**THE APEX MACHINE
& TOOL COMPANY**

1021 S. Patterson Blvd. Dayton, Ohio

F.O.B. *Philosophy of buying*

The War Department's popular slogan, "KEEP 'EM FLYING!" has acquired new significance and a broader application since we are actually in the war, and is particularly apropos in industry. Originally coined to stimulate enrollment in the Army's Aviation Cadet Corps and to provide a growing force of pilots to man the rapidly growing aircraft fleet, it was early recognized by manufacturers as an apt production slogan. Now it is pointed out by the Adjutant General, Major General E. S. Adams, "KEEP 'EM FLYING!" pertains to our flags, the wheels of industry, workers' hands, and to all our activities as well as to airplanes. KEEP 'EM FLYING!

Our attention was arrested by a recent advertising headline in the daily press: "*You need more than a good I.Q. to be successful in these days. You need a good P.A.**" Being in complete accord with this statement, we dutifully followed the asterisk down to the bottom of the ad and found this explanation: "**P.A. — Personal Appearance.*" The only purchasing angle was the suggestion that now is the time to purchase that new suit or overcoat from R. P. (Rogers Peet Company).

Many new and unfamiliar materials are appearing on purchase lists these days—blackout materials, sand for extinguishing incendiary bombs, sirens for air raid alarms. One compensating feature is that relatively high priority ratings can be obtained, one city buyer rejoicing in an A-2 rating for a new siren.

FROM time to time, F.O.B. has quoted some of the very apt slogans that deck the walls of the defense agencies in Washington. Here is another one, seen hanging

over the desk of Harold Mander-son in the Division of Purchases: *In an emergency it is better to do any intelligent thing quickly than to search hesitatingly for the ideal.*

This job of purchasing looks mighty attractive from the outside, but it's no bed of roses. Last fall, Walter M. Williams took over the newly created job of City Purchasing Agent at Peabody, Mass. After two months on the job, he decided to return to private industry.

AMERICA'S travelingest Purchasing Agent—and not much competition for the title (If I'm wrong, correct me)—is E. Van Vechten of United Air Lines Transport Corp., with headquarters in Chicago and a working office wherever you happen to find him. Van's "log" for two weeks in December reads as follows:

10th—Chicago to Omaha to Salt Lake City . . .	1304 Air Miles
11th—Salt Lake City to Boise . . .	301 " "
12th—Boise to Pendleton to Spokane . . .	354 " "
13th—Spokane to Seattle . . .	246 " "
14th—Seattle . . .	
15th—Seattle to Portland . . .	152 " "
16th—Portland . . .	
17th—Portland to San Francisco . . .	575 " "
18th—San Francisco and Oakland . . .	
19th—San Francisco to Los Angeles . . .	327 " "
20th—Santa Monica . . .	
21st—Los Angeles to Salt Lake City to Cheyenne . . .	994 " "
22nd—Cheyenne . . .	
23rd—Cheyenne to Omaha to Chicago . . .	900 " "
Total travel . . .	5143 " "

No junket, the trip was crammed with important contacts, inspections and interviews, including a full day at Boeing, a full day at Douglas, and a full day at the company's main repair base at Cheyenne, calls on local managers, field personnel and stockroom managers at each city, and interviews with from two to nine vendors in each of the cities

When writing The Apex Machine & Tool Company please mention Purchasing

mentioned. Some of these vendors Van had never seen before, though he had been doing business with them for fifteen years, and the results from the new personal contact with these distant suppliers are already evident. But even more significant was the disclosure that in the case of four of the fourteen major suppliers seen, this was the first time that a P.A. had ever visited their factories!

Obviously, many buyers are missing a tremendous opportunity to do a complete job for their companies. Desk-bound, they sit in their offices and never learn how the other half lives. Their personal knowledge of their suppliers is limited to a letterhead and a name, and notwithstanding the pressure and problems of the day they make no determined effort to get better acquainted. They may wonder how the other fellow gets delivery while they are forced to wait, but they don't go out to find the reason why. Perhaps they expect allocations to solve their problem, but even the OPM spokesmen have been frank to admit that today, as always, "the wheel that squeaks the loudest gets the grease." That's a homely proverb, but it will be true just as long as human nature is a factor in business.

Perhaps management is to blame in that the purchasing department budget is not always set up to permit the P.A. to get out into the field as much as he should. But basically this must be charged to the P.A. himself, who ought to know better than anyone else how purchasing should be done, but who hasn't had the conviction and the backbone to sell the idea to management. It's a selling job with plenty of good reasons to back up the presentation.

• *Maybe a pass on the United Lines would help, too.* •

• **T**HE allocation idea is taking hold in retail fields as well—not only in regard to silk stockings, golf balls, and sugar, but even on office supplies and stationery items where stocks are getting low and the stationer wants to take care of his regular trade. It has been inconvenient at times, but the more generally this practice is recognized and applied, we shall have a better understanding of the common problem and better grace in accepting our share of the burden.

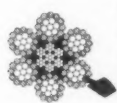
MACWHYTE
Crane
ROPES

MACWHYTE
Atlas Braided
SLINGS

FORTIFY FOR SAFETY AND SPEED!

No rest for Wire Rope—is the story today. Men work in shifts but Crane Ropes work ALL shifts. They're on the job 24 hours a day and in many plants 7 days a week.

You need the best rope with the highest strength, wear resistance, and fatigue resistance . . . all essential to speed and safety. You can get such a rope in the correct size and construction for your cranes—Buy **Monarch Whyte Strand PREformed Crane Rope**. Tell us the make, model, and capacity of your crane and we'll give you the correct rope for it.



Outer wires in each strand are Monarch Whyte Strand **PRE**formed's first line of defense. They have maximum tensile strength, great abrasion resistance.



Inner wires in each strand are the reserve strength of the rope. They are specially drawn with maximum flexibility and toughness for inside service.

Auxiliary Crane Equipment must be SAFE!

Where cranes and hoists are picking up and handling your materials you need slings . . . auxiliary crane equipment . . . that are the *safest* possible. Floor men and crane men must have confidence in slings you buy.

Your slings must grip the load **FIRMLY**, permit **SPEED** in lifting and carrying the load. Macwhyte manufactures such slings: **Macwhyte Atlas Braided Slings**. Today they're being used to handle pipes, bars, shapes, armament, machinery, rolls, etc. The braided body of Macwhyte Atlas Slings, made from two endless wire ropes, is braided in a uniform balanced spiral. This not only provides for **SAFE** load handling . . . but also makes Atlas slings extremely flexible. They're easy to handle, save much handling time.

Send on your company letterhead for helpful rigging bulletins.

CRANE ROPES with extra stamina to hoist your loads . . .
BRAIDED SLINGS to harness it safely. **BUY BOTH FROM**

MACWHYTE COMPANY

2918 Fourteenth Avenue, Kenosha, Wisconsin — Manufacturers of wire rope to meet every need —
Left- & Right-Lay Braided Slings — Stainless Steel Wire Rope — Monel Metal Wire Rope — Aircraft
Cable, Aircraft tie-rods, "Safe-Lock" Swaged Terminals.
New York Pittsburgh Chicago Ft. Worth San Francisco Portland Seattle. Distributors throughout U.S.A.

NO. 595



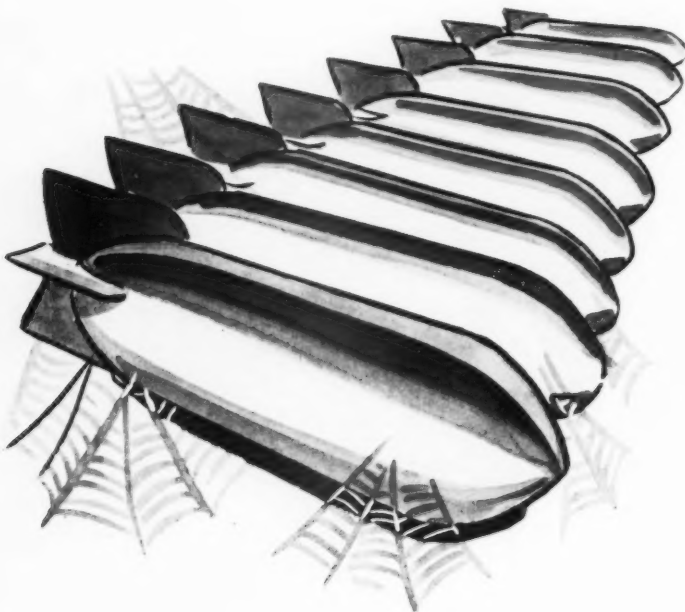
AHEAD OF SCHEDULE

Typical Production Problems that the

1 THE DELAYED-ACTION BOMBS

"Delayed" is right! The supplier of an important part reported that he couldn't get material, so his shipment would be held up indefinitely. That held up the ammunition factory's production. But a hurry-call to the local distributor produced a sufficient quantity to keep the bombs rolling till the supplier could come through.

Don't give up — give your distributor a try at it!



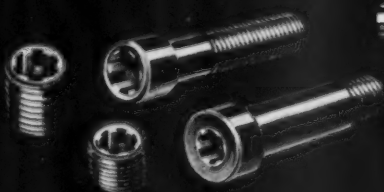
2 PLANE PARTS FROM PLANT X

X stands for "unknown quantity" — and nobody knew where a certain part could be obtained without a long delay. But the distributor knew *another* source of supply — a plant that happened to be starving for orders. The parts were shipped, and planes kept coming off the line.

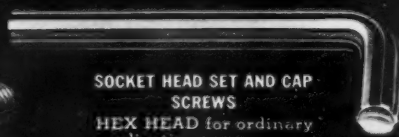
Add your distributor's sources of information to yours.

The Bristol Company markets its line of SOCKET SCREWS and BELT FASTENERS through distributors. See THOMAS' REGISTER for the complete line.

**ORDER FROM YOUR DISTRIBUTOR...
QUARTERMASTER FOR INDUSTRY'S ARMY**



SOCKET HEAD SET AND CAP
SCREWS
HEX HEAD for ordinary
applications.
MULTIPLE SPLINE for
vibration, etc.



BELT FASTENERS
For joining and
repairing con-
veyor and power
belts.

WITH THE AID OF AMERICA'S DISTRIBUTORS

that the Distributor Has Helped Solve



3 4000 ORDERS = 1 TANK

That's probably figuring it *low*. The average good-sized industrial plant buys at least 4,000 different items a year. By putting more of your orders through your distributor, you can save paper work, bookkeeping, phone and wire bills — and have more time to devote to those orders which *must* be placed direct.

Your distributor offers a corps of purchasing specialists to aid you.



4 ENGINE DESIGN PARTLY BY DISTRIBUTOR

A famous motor car manufacturer making airplane engines was stuck. Certain parts could not be obtained as specified for five weeks. The local distributor heard about it. He figured out certain changes in specifications, got them approved by the engineers, and production started almost immediately.

The distributor's experience is broad and long. Take advantage of it!

SOME OF THE BIG REASONS WHY YOUR DISTRIBUTOR CAN HELP KEEP YOU ON SCHEDULE

He can deliver most items (many of which the manufacturer can't ship).

He often knows of special sources of equipment and supplies, for he has many contacts.

He can save you time, trouble and bookkeeping by acting as a single source of supply.

He is trained to assist you even on technical problems.

On some items, because he buys in bigger quantities than an individual firm, he can exert more pressure and get better service.

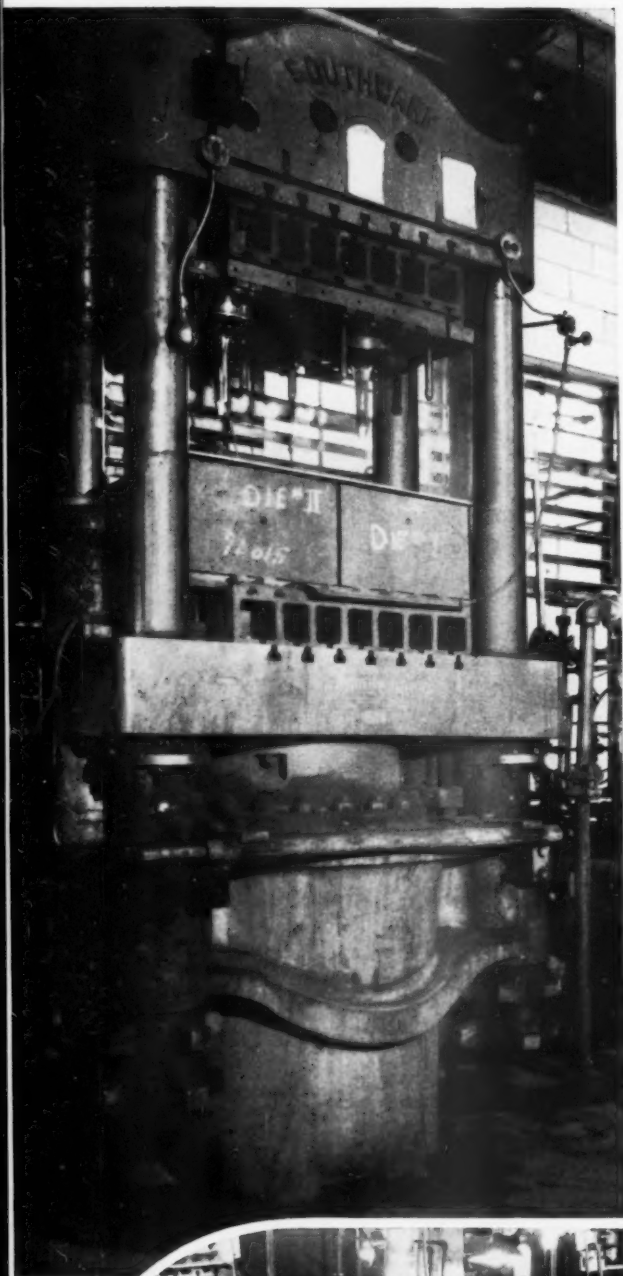


The
BRISTOL
Company

MILL SUPPLY DIVISION

132 BRISTOL ROAD
WATERBURY, CONN.

We Are Fully Equipped to Make Your **MOLDED PLASTICS PARTS** for **DEFENSE PRODUCTION**



Any Size - Any Quantity
Any Specification
ON TIME!

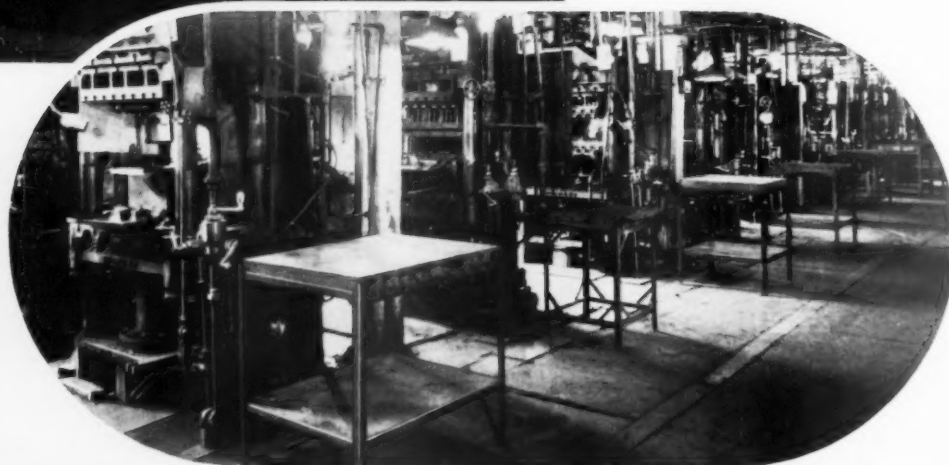


● Here at General Industries we have all it takes to meet your most exacting requirements in molded plastics parts—the capacity, the mechanical equipment, the skill and experience, all backed by an enviable reputation for prompt reliable service.

No matter how large the unit or the quantity required, we can swing into production and prepare to make prompt deliveries.

Our plant with 212,000 square feet of floor space is one of the largest in America. Equipment comprises 128 modern efficient machines of a great range of types and sizes. All operations are under our own roof, from making the molds right through to the finished product.

You can rely on General Industries engineers, long experienced in molded plastics production, to render valuable assistance and cooperate with your departments to the fullest extent.



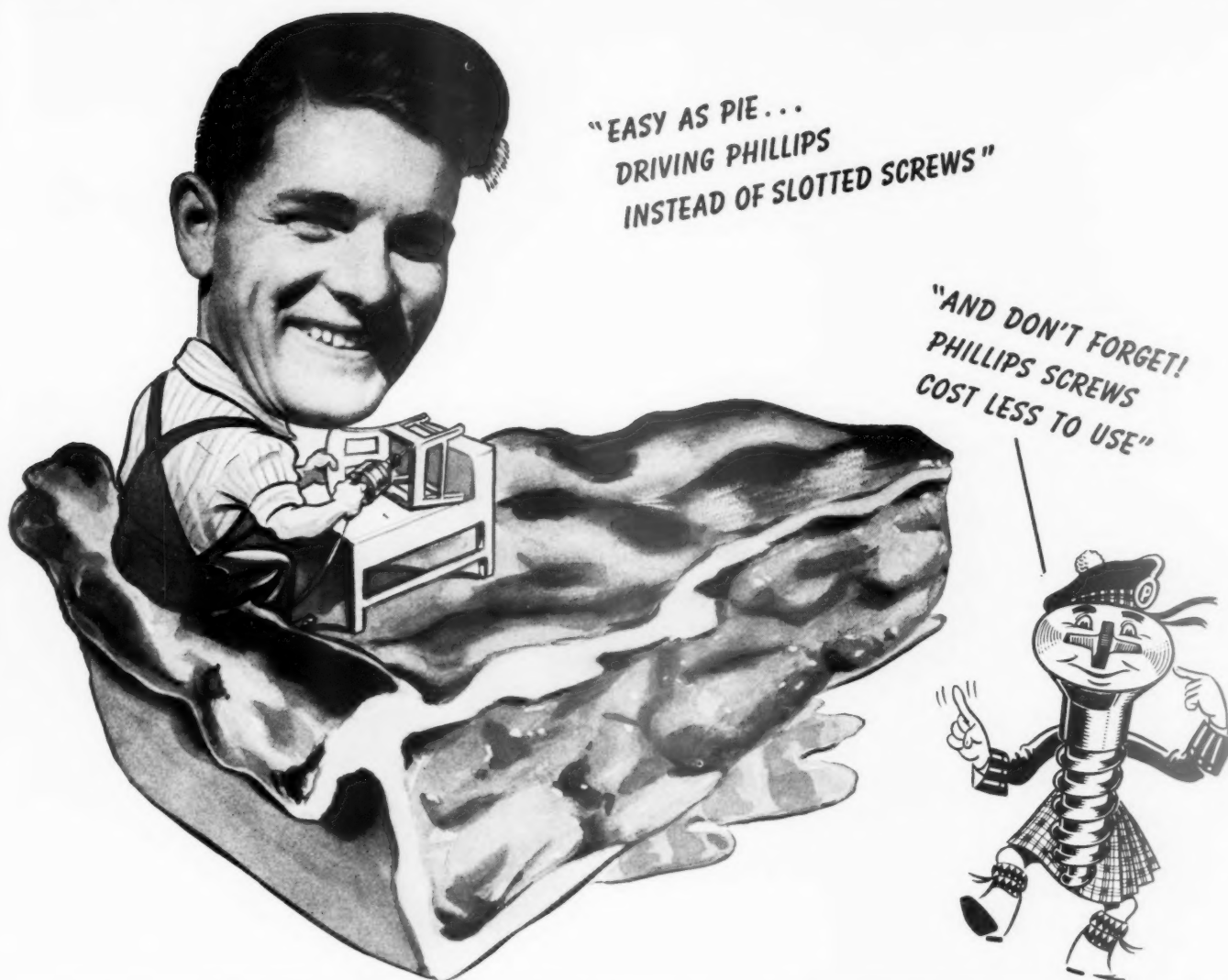
**WRITE, WIRE, OR
PHONE Elyria 2238**

or Phone Office Near You:

CHICAGO . . . Phone Central 8432
DETROIT . . . Phone Madison 2146
PHILADELPHIA . Phone Camden 2215
NEW YORK . Phone Longacre 5-4107
INDIANAPOLIS . Phone Lincoln 6317
MILWAUKEE . . . Phone Daly 4057

The GENERAL INDUSTRIES Co.

MOLDED PLASTICS DIVISION...ELYRIA, OHIO



Less Fatigue • Power Driving • Fewer Operations = 50% Less Assembly Cost with Phillips Screws

Yesterday — slow, painstaking slotted screw driving with plenty of muscle and plenty of care to see that the driver blade stayed in the slot. Plus plenty of time per assembly charged on the cost sheet.

Today — fast driving with the Phillips Screw that clings to the driver and prevents driver slippage. Faster driving methods are safe —

more jobs where electric and pneumatic drivers can be employed. In the average case, Phillips Screws cut assembly time *in half!*

Add up the savings—this 50% reduction in time, the better work done by men less fatigued, the elimination of extra operations (including re-finishing scratched surfaces), the freedom from crooked screws and

split screw heads—you'll find you have a 50% saving in assembly *cost* as well as valuable assembly *time*.

Please your men and your cost accountant by changing to Phillips. They are easy as pie to drive — and make every assembly dollar do twice the work.

Any of the firms listed below will tell you more.



PHILLIPS RECESSED HEAD SCREWS

GIVE YOU *2 for 1* (SPEED AT LOWER COST)

WOOD SCREWS • MACHINE SCREWS • SHEET METAL SCREWS • STOVE BOLTS • SPECIAL THREAD-CUTTING SCREWS • SCREWS WITH LOCK WASHERS

U. S. Patents on Product and Methods Nos. 2,046,343; 2,046,837; 2,046,839; 2,046,840; 2,082,085; 2,084,078; 2,084,079; 2,090,338.

Other Domestic and Foreign Patents Allowed and Pending.

American Screw Co., Providence, R. I.
The Bristol Co., Waterbury, Conn.
Central Screw Co., Chicago, Ill.
Chandler Products Corp., Cleveland, Ohio
Continental Screw Co., New Bedford, Mass.
The Corbin Screw Corp., New Britain, Conn.

International Screw Co., Detroit, Mich.
The Lamson & Sessions Co., Cleveland, Ohio
The National Screw & Mfg. Co., Cleveland, Ohio
New England Screw Co., Keene, N. H.
The Charles Parker Co., Meriden, Conn.
Parker-Kalon Corp., New York, N. Y.
Pawtucket Screw Co., Pawtucket, R. I.

Pheoll Manufacturing Co., Chicago, Ill.
Russell, Burdall & Ward Bolt & Nut Co., Port Chester, N. Y.
Scovill Manufacturing Co., Waterbury, Conn.
Shakeproof Inc., Chicago, Ill.
The Southington Hardware Mfg. Co., Southington, Conn.
Whitney Screw Corp., Nashua, N. H.

When writing Phillips Licensees please mention Purchasing

Extra metal provides *Extra Value* in **WeldELLS**

BECAUSE the bursting stresses in an elbow are higher in the crotch* the wall must be somewhat heavier in this region if uniform strength is to be maintained. In WeldELLS this needed reinforcement is provided, thus assuring more nearly uniform stresses throughout the fitting.

This feature, based on soundest engineering considerations, is just one example of the extra value you get in WeldELLS — just one of eight good reasons for insisting on WeldELLS. And remember, please, that in spite of their premium quality WeldELLS and other Taylor Forge Welding Fittings cost no more.

TAYLOR FORGE & PIPE WORKS, General Office & Works: Chicago, P. O. Box 485
New York Office: 50 Church Street • Philadelphia Office: Broad Street Station Bldg.



WeldELLS have everything!

No other fittings for pipe welding combine these eight features. In addition to that described here these features are:

1. **Seamless**—greater strength and uniformity.
2. **Tangents**—keep weld away from zone of highest stress—simplify lining up.
3. **Precision quarter-marked ends**—simplify layout and help insure accuracy.
4. **Permanent and complete identification marking**—saves time and eliminates errors in shop and field.
5. **Wall thickness never less than specification minimum**—assures full strength and long life.
6. **Machine tool beveled ends**—provides best welding surface and accurate bevel and land.
7. **The most complete line of Welding Fittings and Forged Steel Flanges in the World**—insures complete service and undivided responsibility.

*The amount by which stress is greater at the crotch in a fitting having uniform wall thickness depends only on its radius. Mathematical analysis (specifically the Lorenz formula) shows the stress at the crotch to be:

$$S = \frac{pr(2R - r)}{2t(R - r)}$$

Where S = Bursting stress, lbs. per sq. in.
p = Internal pressure, lbs. per sq. in.
r = $\frac{1}{2}$ inside diameter of fitting (O.D. if Barlow's formula is desired).
t = Wall thickness in inches.
R = Center line radius of fitting, inches.

Numerous tests by the Research Division of Taylor Forge show the formula given above to be somewhat on the conservative side.

When writing Taylor Forge & Pipe Works please mention Purchasing

When U.S. Production Fights Its Battle at Sea



... FIBREEN protects the materials of war ... on deck and below ... against the hazards of transportation



FIBREEN is 6 ply: TWO layers of strong kraft, reinforced with TWO layers of crossed sisal fibers embedded in TWO layers of special asphalt—all combined under heat and pressure. FIBREEN is pliable and clean—will not scuff—stands an astonishing amount of abuse and exposure. Used either as a wrapping or lining material.

Soak it—twist it—try to tear it.

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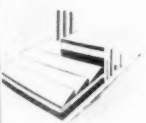
Long before shipments of war materials reach the front, they face the destructive onslaught of rain, waves, flying salt spray—possibly a dry, scorching sun—or snow and piercing cold. Protection against these hazards of transit is as necessary as armed protection against enemy submarines or bombers.

This protection must be made at the factory *in the shipping room*—and FIBREEN is recognized as one of the most effective, practical materials that can be used for protective packing. It is used as a liner for cases or as a tough, weatherproof wrapping. FIBREEN meets the most severe specifications and inspections. It's pliable, clean, inexpensive, is absolutely waterproof—amazingly strong, tough and durable.

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Inquiry is invited from those industries that are in the "essential" classifications. Write, stating what you ship and how you now pack it.

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BUY for "Victory" production . . . Avoid priority problems . . . Get prompt deliveries . . . specify available equipment that will produce Now—and save precious metals. Yes, all this and more...By using Dodge "Victory" Wood Split Pulleys on your power drives.

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DODGE

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THE RIGHT DRIVE FOR EVERY JOB

PURCHASING PREVIEWS

From the Washington office of

PURCHASING

National Press Building

Washington, D. C.

February 2, 1942

For Purchasing Executives:

CONVERSION FOR VICTORY—The ambitious production quotas set in President Roosevelt's "Victory Program" are well within the capacity of American industry. Businessmen were quick to pledge that the job could and would be done. It would require the conversion of whole industries, like the automobile industry, to armament production, and the conversion of every available plant engaged in the manufacture of non-essentials to take a part in the war effort. That process is already under way.

But businessmen went one step further. They insisted that this program would require the conversion of the sprawling defense organization at Washington into a dynamic executive organization, given authority that is commensurate with its responsibility—the power to make policies and decisions and to put them into effect without the endless circuit of advisory committees and liaison officers that has characterized every step of the way up to now.

There was no rancor in this suggestion, which had been made many times before. The necessary job had simply grown to such proportions overnight that former measures were no longer adequate if the goal was to be achieved, and there was no longer time for half-way measures. The defense program was urgent, but the program for actual warfare and victory is vital. This time the counsel was heeded, and we have the War Production Board, with powers as unprecedented as their task is unprecedented.

* * * *

ONE-MAN CONTROL—It is reliably reported that Donald Nelson, who heads WPB, had an important part in dictating the Executive Order creating the new board and outlining its duties and authority. This report has some confirming evidence in the fact that the order itself was not issued until some days after the general plan had been announced, including Mr. Nelson's appointment as its director.

Basically, the features which make this organization different from the earlier set-ups, through all their revisions, is the delegation of actual authority and the centralization of that authority in the person of an individual rather than a board. In other words, we now have executive control over the entire program.

(OVER)

Technically, we have had one-man control before, in the person of the President, who combined the functions of Chief Executive of the nation, Commander-in-Chief of the armed forces, and head of the Office for Emergency Management, which was a part of the Executive Office of the President and to which the other defense agencies were subsidiaries. But this did not work out in a practical way, for it resulted only in the delegation of responsibility without the delegation of authority.

Now we have the delegation of authority, in the hands of a man who demonstrated in his first official moves his willingness to delegate the necessary authority in turn, along with specific responsibility. This is the businessman's way of getting things done, and promises well for the successful administration of production for victory.

Disappointment was voiced in some quarters when it was learned that the personnel of defunct SPAB was being moved over bodily into the newly organized WPB. Presumably this was based upon the experience when the National Resources Board became NDAC, which became OPM, which then came under SPAB, with improvement but incomplete solution of the difficulties in each successive step. But this is no mere change of title. The order is what governs, and the order is apparently adequate in this case. And the authority and responsibility are vested this time in the man, not in the board.

* * * *

UNITY FOR PRODUCTION—The specific policies and acts of WPB are a matter for news columns rather than for comment. The overworked expression of "streamlining" seems to be apropos. Mr. Nelson's record as director of purchases, of priorities, and of SPAB, has been marked by the rule of common sense and an immediate simplification of tortuous routine. It is reasonable to expect that a similar policy will prevail in respect to his administration of WPB.

The immediate effect of the reorganization has been a unification of American industry in support of the program, comparable to the unification of the nation after Pearl Harbor. For two years the relationship between industry and government has been—at worst, the relationship of keen competitors for materials and production capacity, and, in general, the somewhat impersonal relationship of buyer and seller. Now there is almost complete recognition of the common aim, with individual plants and whole industries working toward that aim as departments of U.S.A. Mfg. Co., Inc.

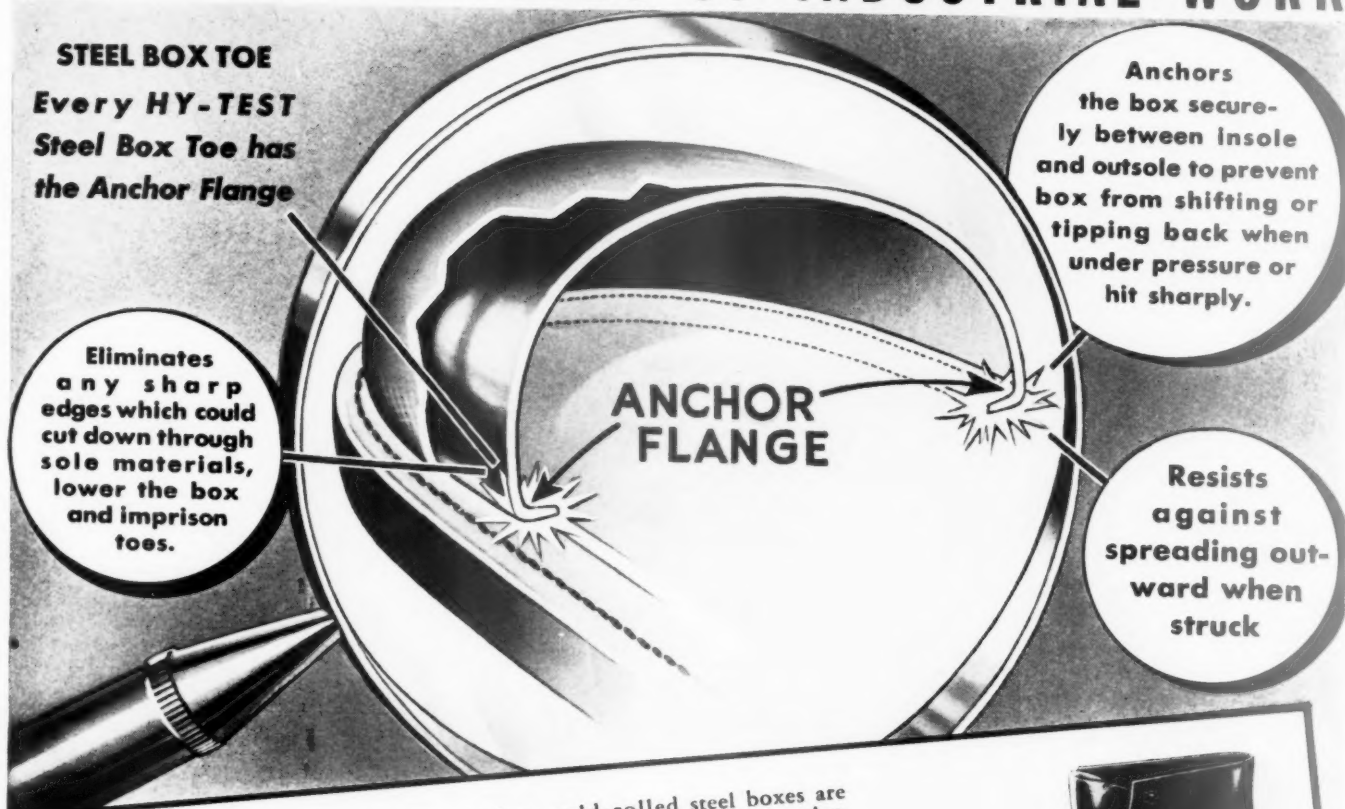
* * * *

ENFORCEMENT—Instances of non-compliance with wartime industrial regulations have been encountered in a very small minority of firms, considering the great scope of the program as a whole. There have been abuses, in regard to inventories, use of materials, and prices. Some of the limitation orders and perhaps the majority of price orders have been issued as a result of those abuses, and have largely eliminated them at the source. There is ample authority for a "crack-down" provided by current legislation, and both the Department of Justice and the war agencies themselves are moving in to effect complete compliance, with particular attention to policing the price features and forestalling inflationary profiteering.

—THE EDITORS

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PURCHASING

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 adaptable to any plant. Materials will win the War!

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CONSERVE—FOR VICTORY

Materials will win the war. In America, the land of plenty, accustomed to the highest living standards ever known in any nation at any time, we have been prodigal of our material resources. Now, with the unprecedented demands of the Victory Program, we are faced with the stern necessity of conserving those materials, and we have a whole new philosophy and technique to learn.

Conservation means the utilization of materials for the maximum good—in the present emergency, for the essential production of military supplies and equipment and machines that will insure an early and complete victory. If it means doing without something that we have accepted heretofore as a matter of course, it is not for the sake of saving, but to release those materials for the more urgent war production.

Industrial conservation has many phases. Some of these are being effected by governmental regulations. Others depend on the cooperation, ingenuity and initiative of industry itself. Wherever the opportunity exists, it is the patriotic duty of every businessman to strive whole-heartedly in the conservation program. Incidentally, it may mean the salvation of many an industrial enterprise in the critical days ahead, and the new habits learned in this emergency will be of permanent and continuing advantage to all industry. The first problem is to recognize such opportunities, so that we may intelligently participate in the task of conservation.

It means limiting the use of scarce materials for less important purposes. It means finding adequate substitutes among more plentiful materials. It means more efficient utilization of materials to get more finished product from available raw materials. It means putting an end to avoidable waste. It means the reclamation of waste materials for further use. It means the immediate conversion of idle but usable metals, in whatever form, into useful raw material. It means the prompt return of production scrap to the mills and refineries where it can be remelted to form new sheets and rods and forgings.

Purchasing men are vitally interested in conservation as a part of the overall materials problem. They are in a peculiarly strategic position to make the conservation program effective because of their function in materials control. They are, by training and experience, more conservation-minded than many other branches of management. Now is the time for all purchasing men, together with their fellow executives in industry, to conserve—for Victory.

Stuart F. Neimitz

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ERIE SHOWS THE WAY IN SALVAGE CAMPAIGN

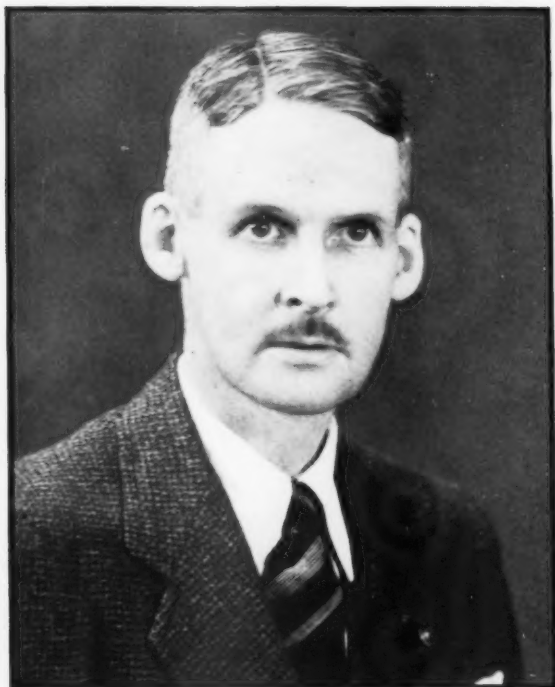
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**Organization on a community-wide basis
is the key to efficient reclamation of scrap
urgently needed by manufacturing indus-
tries today**

●

DOZENS of manufacturing centers will soon be organized for a "Get in the Scrap!" campaign on the pattern of the so-called Erie Plan—a comprehensive program of community effort developed jointly by the Bureau of Industrial Conservation and the Manufacturers Association of Erie, Penna., that has shown notable results in rounding up tons of essential scrap materials and putting them back into the stream of production for Victory.

The City of Erie, proving ground for this important project, is a typical industrial area characterized by a wide diversity of manufactures—paper, rubber goods, heavy machinery, metal working and wood working



FLOYD E. BLIVEN
Supervisor of Salvage
Erie Works General Electric Co.

DANA JONES
Secretary
Manufacturers Assn. of Erie



plants, technical instruments, and light manufacturing—and by a broad range in the size of the industries represented, from small shops to large plants with acres of floor space. In addition to these qualifications, it has an active and progressive Manufacturers Association to initiate and give administrative direction to the campaign. As a matter of fact, this Association was months ahead of the procession, and made a basic survey of the situation in its own community as early as last October, providing a factual background that has been invaluable in setting the pattern for the work.

In conference with representatives of the industrial Salvage Section of the Conservation Bureau, the salvage possibilities indicated by this information have been impressively realized through a three-fold plan of organization, education, and aggressive direction. The work has been carefully watched at every step to discover any possible "bugs" in the plan and to correct mistakes or deficiencies at the outset. Frankly, there has been very little of this sort encountered, for the plan was soundly conceived and intelligently administered from the start. It was put into operation in December, and the excellent results attained in the first weeks of trial have warranted adoption of the Erie Plan as standard procedure. By the middle of January, the Industrial Salvage Section's staff was actively in the field, organizing other communities on the same pattern, and the plan will shortly be operating on a nation-wide scale.

Objectives

The aims of the Erie Plan, as a practical means of conserving the nation's material resources and putting them to useful work, are:

(1) A house-cleaning drive to bring out the tons of dormant scrap represented by accumulations of waste material, abandoned equipment, idle and obsolete machinery.

(2) A consciousness on the part of every one in industry, from management to the individual operator at the machine, of the importance of waste materials and the necessity for their conservation.

(3) Development of better methods in the handling and reclamation of scrap, and the centralization of responsibility for this function in every plant, regardless of the size of the operation.

(4) Speed in the recovery of usable scrap materials, prompt utilization within the plant itself or return to the mills and refineries through existing channels.

Central Organization

To attain these objectives, the first step is the organization of an Executive Committee to administer the plan, to furnish the initial and continuing "drive" necessary to its success, to provide educational aids and expert counsel, to serve as a clearing house for the exchange of experience and to receive progress reports, and to maintain contact with the national program through the Industrial Salvage Section. It has been found desirable to have this committee include representatives of large and small plants, men who understand salvage methods, a representative of the local Foremen's Association to tie in with the group which must be depended upon to carry the campaign right into the plants themselves in order to make it effective, and an executive director to carry on the details of management and to maintain the liaison with Washington.

At Erie, this Executive Committee includes the following:

WHAT TO DO NOW

(Extract from a Bulletin of the Erie Industrial Salvage Committee)

FIRST: Realize that the country faces an extreme emergency — War — that this is a mechanized warfare; that all things being equal, that nation will win which is best equipped with machines, munitions and men; and that steel is a major component factor in equipment.

SECOND: Remember that one ton of scrap makes four tons of steel—and there is a steel shortage.

THIRD: If you have not done so, designate someone in your plant to be responsible for hunting up all metal scrap and waste material, unused machinery that cannot be repaired and put back into use, and every other item of all kinds of metals that may be waste to you but valuable raw material to somebody else.

FOURTH: See that he gets these materials moving quickly. If you can't use it yourself, call your regular waste material dealer, no matter how small a load you have; get it moving. Some waste material dealers in Erie are turning over their product in thirty-six hours, where normally it used to take a considerable number of weeks and even months to get the material back to the proper production place.

FIFTH: Keep everlastingly at it, because scrap accumulates. Do not mix scrap if you can help it; keep your different kinds of metals separate.

SIXTH: Please report the volume of scrap you are moving, so that this information may be turned over to the industrial Salvage Section, OPM Bureau of Conservation.

F. E. Bliven, Supervisor of Salvage, General Electric Co., *Chairman*.

W. L. Little, Works Manager, Bucyrus-Erie Co., President of the Manufacturers Association of Erie.

R. C. MacElroy, Secretary, U. S. Metal Products Co.

M. F. McCarty, Assistant to the President, Erie Forge & Steel Co.

Alvin Decker, Secretary-Treasurer, Merwin Mfg. Co.

Harry Bole, Superintendent, Erie Meter Systems, Inc., President of the Erie Foremen's Association.

Dana Jones, Secretary, Manufacturers Association of Erie.

While the impetus and direction of the program derives from the Manufacturers Association, it is regarded primarily as a community project rather than as an association project. Similarly, while the plan has the whole-hearted endorsement and practical assistance of OPM officials, who have spent much time in Erie helping in the organization work and conferring with the various committees and groups, it is primarily a campaign by industry and for industry, rather than something which is handed down from Washington.

Dana Jones, executive secretary of the committee, is the

man designated in Washington releases as in active charge of the campaign, and as the point of contact between the national campaign and the local project. The bulletins emanating from his office, embodying the practical meat of the whole program, are the basis of national releases and instruction sheets for the wider application of the principles which have been eminently successful at Erie. Mr. Bliven, chairman of the committee, a man of long and successful experience in salvage operations, is designated as consultant for the area, giving counsel and direction particularly for the benefit of those plants where salvage has not been effectively organized prior to the present effort. A basic feature of the plan as applied to other communities will be the appointment of such a consultant to each district, preferably assigned from local industry, whose services will be available without charge to companies looking for help and information on salvage methods.

Besides general direction of the local campaign, and co-ordination of all the various interests having a part in it, the duties of the Executive Committee include: (1) Seeing to it that some one is appointed in each plant to have the responsibility for salvage activities; (2) Maintaining a list of all waste material dealers in the area, and enlisting their cooperation in the effort; (3) Receiving and tabulating reports on the results of the campaign. These reports, made on a weekly basis in the early stages, are primarily for the purpose of demonstrating the potentialities of the plan and to



This 55-inch magnet at the Salvage Department of the Erie Works, General Electric Co., is loading hydraulic compressed bales of refrigerator-cabinet sheet steel scrap. The actual lift shown is 4500 pounds, in ten bales.



Bales of sheet steel, waste from fabricating operations, go back to the foundry as the raw material for further manufacture.

Careful classification and segregation of scrap is an important step in the salvage program at the Pontiac Motor Division. Contamination reduces usefulness and value, and complicates the salvage process.

encourage active and continued participation by showing a record of accomplishment.

Advisory Committee

The second step in organization was the formation of an Advisory Committee, consisting of specialists on various materials pertinent to the industry of the community. The make-up of this committee might vary in different communities according to the types of industry represented, but will follow in general the broad classifications of commodities recognized in the waste material industry and which are required in the Victory program. One of the significant points demonstrated in these campaigns is that the type of scrap produced is not necessarily too closely allied with the manufactured product, though of course the bulk of scrap resulting from manufacturing operations will have a closer relationship. For example, tons of iron and steel scrap have been recovered from paper and textile mills through the disposal of obsolete machinery, while tons of waste paper have come from steel mills. Even such unlikely places as brick yards have contributed sizable quantities of usable scrap material which would normally have been lost to manufacturing industries through sheer neglect.

In the Erie program, the personnel of the Advisory Committee included:

Steel, E. L. Stinyard, Works Manager, Standard Stoker Co.

Non-Ferrous Metals, C. E. Piper, Treasurer and Manager, Erie Bronze Co.

Paper, Donald S. Leslie, Vice President and Assistant General Manager, Hammermill Paper Co.

Rubber, Dr. Paul Henkel, General Manager, Continental Rubber Works.

Malleable Iron, Paul Vincent, General Manager, Erie Malleable Iron Co.

Gray Iron, E. J. Hedlund, Partner, Urick Foundry Co.



Wood, Delmar Van Geem, President, Erie Crate & Mfg. Co.

Lumber, William Hamilton, Jr., Owner, Hamilton Car & Lumber Co.

Miscellaneous, R. Richard Fryling, President, Erie Resistor Co.

This committee presents a good working cross-section of the principal materials to be considered in respect to Erie's industries, and makes expert knowledge available in each of these fields. By careful selection of personnel, another important objective is attained—active personal interest and contact in nine additional plants, beyond those represented on the Executive Committee. The enthusiasm and effectiveness of the campaign is naturally enhanced throughout the industrial community because of this. It is the intention, at Erie, to expand the Advisory Committee whenever necessary to give representation and advice on any other classification of waste material as the need is shown. One additional member slated for early appointment will represent the local Purchasing Agents Association, for it has been noted that in a

Continued on page 158

LESSING J. ROSENWALD
Chief, Bureau of Industrial Conservation

PAUL C. CABOT
Deputy Chief



Photos by OEM

CONSERVATION IN THE WAR PROGRAM

By **STUART F. HEINRITZ**

The Bureau of Industrial Conservation aims to save critical materials at the source and to have waste materials returned promptly into the stream of production.

THE Office of Production Management has recognized the importance of conserving scarce materials in every possible way as an essential part of the Victory program. To this end the Bureau of Industrial Conservation has been set up, headed by Lessing J. Rosenwald. Paul C. Cabot is Deputy Chief of the Bureau.

Four branches are operating within this Bureau, giving specialized attention to various phases of the work. These branches are:

1. Conservation and Substitution
2. Specification
3. Simplification
4. Salvage



Harris & Ewing

Working along these four major lines, closely coordinated in the interests of the overall program, a comprehensive and well rounded campaign is under way and is already showing significant results.

In the Conservation and Substitution Branch, headed by Harvey A. Anderson, is a staff of some twenty consultants, each a specialist from industry and familiar with the practical requirements of industry in respect to materials. This part of the organization follows closely the set-up of committees in the Materials Division of W.P.B., and the Conservation Bureau consultants serve as advisers to these committees, maintaining liaison between the two offices. For the most part, these assignments are on the basis of specific materials or material groups, and in some cases on the basis of industries. They are, of course, ready to serve wherever their special qualifications may be advantageously employed. The petroleum consultant, for example, is E. H. Weaver, Manager of Purchases for the Union Oil Company of California, well fitted to advise both on conditions and requirements in the petroleum industry itself and on the use of petroleum products in other industries.

The consultants include specialists on: aluminum and magnesium; chemicals and allied products; iron and steel; power and communications; cork and asbestos; nickel; tungsten, molybdenum, etc.; copper, zinc, etc.; manganese, chromite, etc.; tin, lead, etc.; mica and fluorspar; miscellaneous minerals; rubber; paper; plastics; textiles; wood; leather; food; petroleum.

Getting Results

This branch has been actively assisting in drawing up the conservation orders which are promulgated through the Materials Division, and many of its recommendations are effecting large savings of critical materials which thus become available for more important uses in meeting the present emergency. Typical instances of such savings are:

200,000 pounds of manganese, formerly used as a hardener in aluminum casting alloys, and now replaced by zinc alloys.

4,000 tons of tungsten, by substituting molybdenum.

40,000 tons of magnesium, through cutting down its use by one-half in zinc base alloys.

8,000 tons of tin, by reducing the thickness of tin coatings in the canning industry, and by further saving through the use of organic lacquers in place of tin coating.

98% of the copper and brass formerly used in builders' hardware, by using brass plated iron or steel in place of the solid brass.

The zinc base die-casting industry, recently operating at only 20% of capacity, is now up to 60% as such castings are replacing aluminum.

Stainless steel and glass are replacing aluminum in reflectors.

This list of accomplishments in which the Conservation and Substitution Branch has had a part, could be greatly extended; these are but typical examples. Another notable service is performed by seeing to it that the process of substitution does not inadvertently turn from one scarce material to another which may be in an even more critical position. Having the overall picture, as contrasted with the Materials Committees which are concerned with a more specific and limited field, the Conservation Branch is in a position to forestall such decisions and to channel all scarce materials into the most essential uses, while keeping the program as a whole in balance.

The Specification Branch, headed by C. L. Warwick, deals directly with the specifying officers of government departments. There are upwards of ninety



EDWIN W. ELY

Chief,
Simplification Branch



H. L. GUTTERSON

Chief,
General Salvage
Section

boards, departments, and agencies in the Federal government which have been writing their own specifications, frequently with little regard for what the other groups are doing. Working through these agencies toward the conservation of scarce materials, and to reconcile conflicting interests, the Specifications Branch has made excellent progress.

Most familiar example is the so-called "strip tease" act by which specifications for all new government buildings come under the scrutiny of this Branch for the elimination of all critical materials in the way of hardware, appurtenances, and construction materials, and the substitution of more plentiful materials which will serve the purpose.

Meanwhile Army and Navy specifications have been revised to provide for a greater use of secondary aluminum in place of the virgin metal, and other current projects contemplate the use of reworked wool in blankets and uniforms, the use of more reclaimed rubber for the sidewalls of tires, and the like. There is a constant effort to develop alternative emergency specifications—away from the critical materials, releasing them for more essential uses in the war effort.

Simplification Branch

The Simplification Branch, headed by Edwin W. Ely of the National Bureau of Standards, stresses the reduction in the number of sizes, shapes, colors, grades, etc., in various products. This serves the double purpose of aiding manufacturers to make better

H. A. ANDERSON

Chief,
Conservation and
Substitution Branch



C. L. WARWICK

Chief,
Specification Branch

use of production facilities and to reduce costs, and of conserving materials by requiring fewer items to be held in stock.

A typical instance illustrating this process is the recent appeal to glass-container manufacturers, packers, bottlers and other users of glass containers, to conserve raw materials needed for war production by simplifying bottle sizes, shapes and finishes wherever possible. A reduction in varieties would permit more efficient use of manpower, fuel and equipment, besides effecting important savings of critical materials such as soda ash and other chemicals. The plan also calls for the use of a greater proportion of large size containers, utilization of existing mold equipment, and elimination of fancy designs which require more glass per unit than in the case of conventional designs. Paper used for shipping cases would also be conserved through such simplification.

Salvage Branch

Salvage of obsolete and waste materials is the fourth division of the conservation program. This Branch has two sections—Industrial Salvage, under the direction of George T. Weymouth, and General Salvage, under the direction of Herbert L. Gutterson.

The Industrial Salvage Section has gone directly to the plants with a three-fold program—(1) to clean house and get the tons of dormant waste accumulation, obsolete machinery, and the like, flowing back into production in the form of urgently needed scrap; (2) to minimize waste and spoilage, and to encourage the

utilization of blanks, short ends, etc., as raw material for production; and (3) to establish better methods of handling and recovering the scrap that is being produced daily in the processes of manufacture and fabrication, so as to avoid contamination and make the waste material available quickly and in the best condition for recovery at the mills, smelters and foundries.

For example, in the airplane industry, which was the subject of intensive study and attention because of the great quantities of aluminum required, a standard procedure for handling scrap has been worked out and embodied in O.P.M.'s Supplementary Order M-1-d, dated January 7th, and this has become mandatory in the industry. Applying these principles, the flow of secondary aluminum for remelting and further use was increased by 69% in one month, during which plane production increased 24%, a comparison which indicates strikingly the greatly improved efficiency in recovering important scrap.

On a more general scale, the work is being promoted on a regional basis. The city of Erie, Penna., was selected as the experimental center, and the organization and methods developed in that area are now being adapted in dozens of other industrial areas with notable success. The "Erie Plan" is explained in detail elsewhere in this issue. Industry is doing the job, enlisting the aid of every man, from management and supervisors to the operator at the machine, while the Washington office furnishes guidance, promotional material, and "drive." It is important to note also that the full cooperation of waste material dealers has contributed largely to the effectiveness of the campaign, for it has been the policy to use existing channels for the collection, grading, preparation and disposal of the scrap.

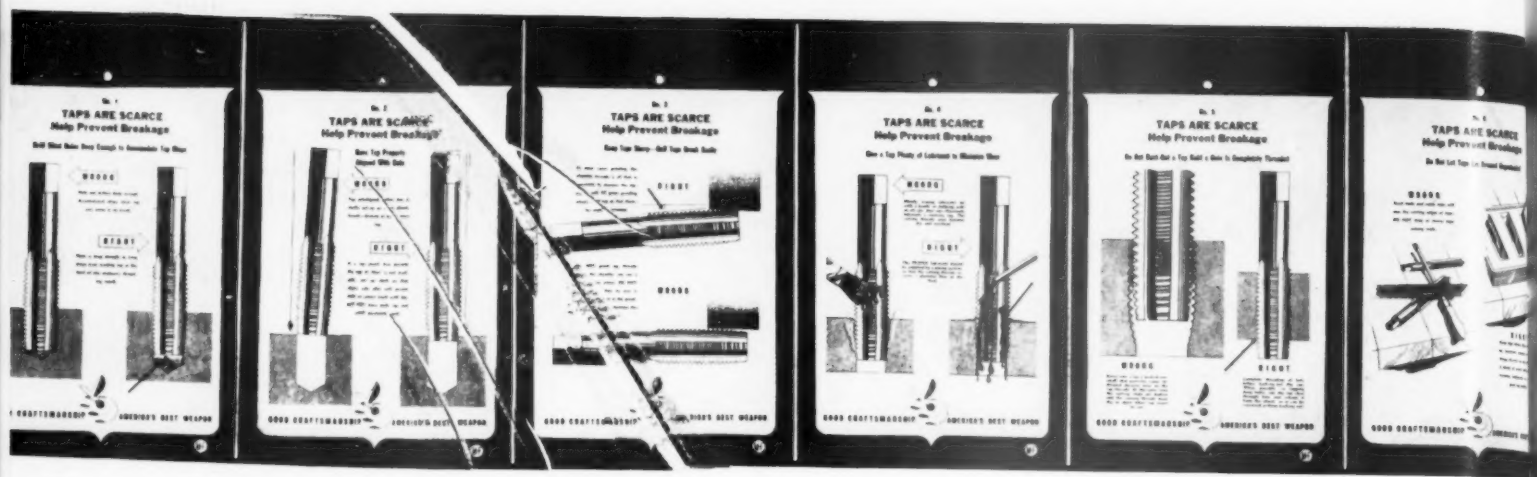
Tons of Scrap Recovered

In addition to the initial return from "housecleaning" operations at Erie—2,292 tons in the first two weeks from the dismantling of idle equipment and the disposal of accumulated scrap piles—it is conservatively estimated that the newly aroused consciousness of the importance of scrap and greater care and better methods in its recovery, will result in a return of 10% to 15% more than would otherwise have been the case. Impressive as these figures are, there is still another factor which does not appear in the statistics and which is of equal importance. That includes the material saved from the scrap pile by more careful operation and the scrap which is reclaimed and used within the organization itself. There is, of course, no accurate measure of these savings, but the evidence indicates a great improvement in such utilization, which is conservation in the truest sense.

Certain large and special projects such as the salvaging of abandoned street car rails, old bridges and similar cases of a semi-public nature, involving considerable tonnages, are receiving special attention and are aggressively followed by representatives of this section.

The General Salvage Section is working to bring out the quantities of usable scrap known to be lying idle in thousands of homes and garages, in back yards, on the farms, and in small retail establishments or other places of business. This is basically a problem of education and publicity, and again it is a matter of proper organization. The general plan is to work through the various State Defense Councils, which in turn have their branches in each community. It is proposed to establish a State Salvage Committee to

Continued on page 166



BEAT TOOL SHORTAGE

Tool Craftsmanship Charts help industry
get better usage and longer life from tools

TO make the ships, planes and tanks for mechanized warfare, American industry needs tools, tools, and more tools. The manufacturers of taps, drills, cutters, saws, files, and other supplies are working night and day in a desperate effort to meet the seemingly endless demand. Yet any one working on defense orders knows that tools are scarce, and are getting scarcer. When a tool breaks, the Purchasing Agent can no longer call up the supplier and get an immediate replacement. A ruined tool is a serious loss, a bottleneck in the production of war material.

The seriousness of this situation cannot be overestimated, for the outcome of the war and the future of our country is largely dependent upon our ability to supply our industrial plant with sufficient tools. It is therefore of the utmost importance to take care of the tools already on hand and to instill in every employee an understanding of the necessity for treating tools properly and thus increasing the useful life of these scarce articles. To extend the life of a tool by eliminating carelessness and avoidable breakage, is to eliminate the necessity of securing a replacement. This is conservation in a true sense, and a distinct contribution to the national production program.

Aggravating this problem is the present demand for greater speed, and the necessary employment of thousands of workers who are semi-skilled and hastily trained in the use of tools. Their mistakes, due to a lack of knowledge and training, are responsible for breakage and loss that can be avoided.

One of the most effective aids in correcting this situation is a series of Tool Craftsmanship Charts prepared and distributed by MILL & FACTORY, 205 East 42nd St., New York, N. Y., depicting some of the more common tool abuses and the way to correct them. A clear pictorial presentation shows the wrong and right method of handling the tools—a series of six

charts covering the subject of taps, a second series of six on drills, and others now in preparation on milling cutters, standard cutters, and other tools which are scarce and urgently needed. The charts are printed on heavy stock, designed for mounting on plant bulletin boards and other conspicuous places in the shop.

Although these abuses may seem elementary to skilled machinists, they are nevertheless just as effective in destroying thousands of tools as a well-placed bomb would be. The charts are of particular value to the semi-trained operator who does not have the knowledge or experience to appreciate the fact that tools are very easily ruined by careless usage. They also serve as a splendid reminder to skilled machinists who are apt to grow careless in the present pressure for speed. The effective display of such charts will make all employees "tool-conscious" and will definitely help the war production program by saving tools from careless destruction.

Upwards of 40,000 sets of each of the first two series have already been distributed and are at work in plants throughout the country. Through the offices of the British Purchasing Commission, additional thousands are being used to good effect in the production plants of our allies. Another edition is now being prepared for use in Russian industry. In view of the war emergency, all copyright privileges on these charts have been released by the publishers, and any industrialist is at liberty to reproduce them, enlarge them, or use them in any way which may assist in his war production. Purchasing Agents who are "sweating blood" to procure new tools will find them invaluable in relieving the situation. Reprints are available at bare production and mailing costs—10 cents for a set of six, ready for displaying in the shop. They can be ordered from the publishers at the address given herein. Put them to work the moment they arrive. Send cash or check with order.

EXPEDITING BEGINS IN THE PURCHASING DEPARTMENT

Time-saving methods developed by compact purchasing department of Operadio Manufacturing Company, whose yearly buying runs to \$700,000 when business is as usual, yield quick results as it jumps to over \$1,500,000 in the emergency.

By HERBERT E. FLEMING

E. E. SWICK

Purchasing Agent



ONE Tuesday noon recently J. McWilliams Stone, radio pioneer, founder and president of the Operadio Manufacturing Company, at St. Charles, Illinois, manufacturer of loud-speakers, amplifiers, intercommunication and paging systems and related sound systems, plumped a stack of blueprints on the desk of Edwin E. Swick, its lively Purchasing Agent.

"These are for a bid that has to be in the hands of the Signal Corps procurement people at Brooklyn by next Tuesday," said the "big boss." "Eddie" Swick, who might well be called Mr. Quick (and whose middle name in fact is Early) snapped into it; for his department names the costs on every bill of materials for production by that company. An engineer assigned by the Chief Engineer worked in cooperation with him. Within the week they had developed the required bill of materials. It involved 200 assemblies, and in all 500

items. An Operadio representative reported at Brooklyn on the following Tuesday. He put in the company's bid. Competitors, saying they were not ready, asked for a week's postponement. This was granted. But Operadio got the contract—a \$500,000 order, which at government option can be raised to \$1,000,000.

Through such rapid-fire work, plus a policy adopted in January, 1940, of getting onto the curves of defense work, by seeking and handling for the Signal Corps one small order after another, this company has received several notable contracts, in the main for applications of the lines of equipment it regularly produces. One, showing how modern production overcomes the noise of modern battle, was for tanks, providing amplifiers and controls for an intercommunication system between the commanding officer, driver, gunners, and radio operator. Other installations of the company's

Rush-order buying and production are called for by the bread-and-butter feature of this company's business. In this the Operadio people are tailors to the radio-set manufacturing trade. They manufacture loud-speakers for fifteen or more radio manufacturing companies, according to 150 or more sets of specifications in a set-manufacturing season. Although during the winter Operadio builds up reserve parts, most of this manufacture is on hurry-up orders in the season from April to November. This year's Operadio production of "speakers" will run from 1,500,000 to 2,000,000 units.

The principal parts of loud-speakers, ranging from 4 to 15 inches in diameter, are: motor pot, cone casing, field and voice coils, paper diaphragm, transformer, lead wires. The amplifier is the heart of all the sound systems. The main materials which Mr. Swick pur-

For handling with dispatch all the work of this company's purchasing department, Mr. Swick has a compact little group. It consists only of himself.

[illegible]

The emphasis in all Purchasing Department forms is on speedy procurement and delivery



J. McWILLIAMS STONE, President

He expects quick action on the 60% of total company expenditures which are made through the Purchasing Department

devoting all of his time to purchasing, and three girls: his secretary, one who prices bills of materials and OK's invoices, and one who types purchase orders and other papers and prices some requisitions.

Up to three years ago Mr. Swick had responsibility also for the stock-record cards and follow-up work, but the two men doing this under his supervision have been transferred to the planning department under G. K. Brigham, Factory Superintendent. With the defense work added, there are now three men handling this in the planning department: Walter Karstens, on loud-speakers; Fred Voorhaar, on defense orders; and Harry Bryant, on amplifiers and other products. General Manager Haase said:

"We transferred the stock-record and follow-up work to the planning department, which is in the production department, because we had got to the place where 'Ed' should give full time to purchasing as such. We do not know how others allocate these functions, but this is the way we do. It leaves our Purchasing Agent free to work on such matters as contracts and sources of supply. Furthermore it enables the production manager to do better scheduling, for it puts him in closer touch with the facts as to when material is promised and when it is coming in."

Another benefit of this separation is that it conserves the influence of the Purchasing Agent who has placed an order with a given supplier about poking up that supplier for delivery. The planning department men keep in close touch with Mr. Swick, and appeal to him when they don't get results from their follow-up efforts. The Operadio practice is to handle poke-ups on a coordinate basis, as to its own organization and that of a supplier. The clerks in the planning department, as follow-up men, telephone or write letters to suppliers' sales department clerks. When Mr. Swick gets into



G. R. HAASE, General Manager

Defense business and rush demands on regular lines create a responsibility for expeditious work in purchasing

follow-up, he ordinarily communicates with the supplier company's sales manager. When the situation is extreme, he asks President Stone to say a word to the head of the supplying company.

For attaining speed in placing orders and getting deliveries, a small purchasing department in a relatively small company, with its close contacts, has an advantage over a large department in a big business organization, with its looser contacts and inevitable red tape. But a small department cannot be quick merely because it is small. It has to adopt practices that make for rapidity in outside and inside transactions.

A striking feature of the methods followed by Mr. Swick in doing fast work in relations with his company's departments and with supplier companies is extensive use, not only of the telephone, but also of the "Flexifone," as one of the intercommunication systems manufactured by Operadio is called. It is a case of the shoemaker wearing his own shoes. On a window ledge near Mr. Swick's desk there is a small cabinet containing a microphone and loud-speaker, a button for volume control, a switch for two-way conversations, and a series of punch buttons for station selection. Among the names on the station selectors in his cabinet or box, besides "Planning Department" are those of Mr. Stone, President, L. A. King, Sales Manager, Mr. Haase, General Manager, C. Johnson, Chief Mechanical Engineer, J. F. McCraigh, Chief Engineer on Amplifiers, C. T. Weibler, Chief Engineer on Speakers, G. K. Brigham, Factory Superintendent and Ray Upham, Shipping and Receiving Clerk.

When Mr. Swick wants to talk with any one of these, he merely sets the proper controls, and speaks in an ordinary voice. The one addressed, if present, answers, and the conversation proceeds. For example,

while your interviewer was at Mr. Swick's desk, there came a telephone call from a Chicago manufacturer of shipping crates. This manufacturer said that, on an order for 200 to be delivered by his truck the next day, he had 50 that would be ready that afternoon. Mr. Swick asked him to hold the wire for a minute. Next, through his "Flexifone" he called the planning department and learned that an Operadio truck was going to



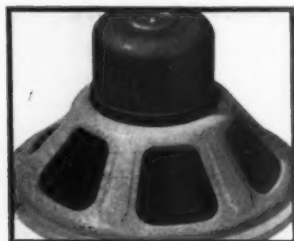
Mr. Swick himself uses this model of Flexifone in his daily work

be in the city that afternoon. So, he said to the planning clerk, "You have our truck pick up those 50." Then he turned to the long distance telephone and said to his caller: "Our truck will stop at your place for that lot today. Thanks for letting us know." Thus the whole transaction was handled happily and very quickly.

The speed of "winged words" is the standard for elapsed time on actions in the purchasing department of the Operadio company. Its Purchasing Agent does a great deal of telephoning, including long distance. Since St. Charles is 35 miles from Chicago, where many of its suppliers are situated, it has two trunk lines to that city. In its two plants, a mile apart on opposite sides of the Fox River, it has thirty of its own inter-communication system stations.

The forms used by the Operadio Purchasing Department for its routine work are simple and few. They were designed by Mr. Swick to secure direct action, quickly. This is conspicuously true of the Purchase Order form. It contains no contract details on the back. "If you hang some guy because of fine print on the back of a purchase order," said Mr. Swick, "you won't do any more business with him, and that may slow you down."

This purchase order is made out in quadruplicate, on a continuous form. The top copy, blue, goes to the supplier; second copy, white, to the bookkeeper; third, pink, to the production department, which after checking against its requisition, returns this copy to the purchasing department for its permanent record; fourth, yellow, with prices blacked out, to the receiving room.



Operadio produces nearly two million loudspeakers a year for the set-makers

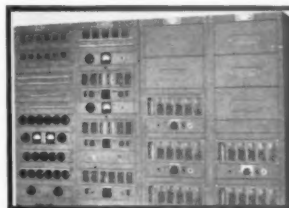
The aim, usually accomplished, on materials required for an Operadio customer's order received in the morning is to get out the purchase orders to suppliers by evening of the same day. Since the customer's

order has to go through the sales, credit, typing, and production departments before it gets to the purchasing department, this means fast work there late in the afternoon. At 4 o'clock the day when your interviewer visited the Operadio offices there were fifty purchase orders to go out that evening. "And they'll be in the mails at 5 o'clock," said Mr. Swick, with justifiable pride.

Recently Operadio has been experimenting with sending out along with each purchase order, a self-addressed government postal card for acknowledgment of its receipt. This card bears the same printed number as does the purchase order. It has provision for showing when the various items on the order will be shipped. About three-fourths of such cards sent out have been returned. Mr. Swick says, however, that "a system is only as good as you make it, by taking time to follow up by letter and phone." He tells the follow-up men that if such cards pile up in the hands of a supplier, that supplier will fail to get the idea that the company means business with reference to quick deliveries.

Requisitions call for speedy action; five day delivery is normally expected. Another provision for speeding is indicated by a column headed "Conf." on requisitions from the speaker or the amplifier departments. It reflects the fact that on repeat orders for standard parts, the production people may order directly by telephone, following the basic work done by the purchasing department on the original order. Then in that column they report confirmation of the order. This is merely one of many provisions for short-cuts.

For the work of checking on suppliers' invoices as well as for giving costs on bills of materials, Mr. Swick has a practice which makes for quick work through-



Section of typical control room panel used in radio broadcasting

out the year. This is to establish at the first of each year, standard costs for that year. This applies to virtually all items except the transformer coils, as to which there are some variables. For instance, on copper and steel he gives the cost department at the beginning of the year figures based on contract prices. If substantial changes come during the year no change is made in figures given to the cost department on orders handled, but the percentage for loading for general overhead is increased. While on some items during a year actual costs will be over the standard, on others they will be under. Over the years Mr. Swick has come out on the safe side, and through this practice has speeded both costing and checking.

To attain ready reference, the Operadio purchasing department keeps most of its own records in convenient files. In one file there is, as to each principal commodity or part number, a card for each supplier carrying description, purchase order number and date, quantity, and price on all orders he has received. Typical headings are: cabinets, magnets, microphones, pickups, condensers, projectors, resistors, steel, switches, terminal strips, transformers, tube sockets, wire. The cards in this file are on a "wheeldex" ring, in a folding

desk adjoining that of Mr. Swick's secretary. This can be whirled to a given card in a flash.

Besides this there are ring binder volumes containing: (1) bills of materials priced at standard costs; (2) blue prints of transformers; (3) special papers on defense orders.

Catalogs from actual and potential suppliers, covering what they respectively have to offer, are filed in four sectional cabinets within a few feet of Mr. Swick's desk.

There is no partition between his office and that of the three young women who handle his office work. Their desks are in the general office space adjoined on one side by the billing department and on the other by the general stenographic force, with the general files in the rear.

The layout of the Operadio Purchasing Agent's office, not only in relation to the other offices of the company, but also in relation to the ante-room, is such as to save steps, particularly in the handling of salesmen. All of these offices are on the second floor of the Company's plant No. 1. The salesman ascending the stairs at the west end of the building finds himself in a small ante-room with five arm chairs. As he looks east there is an information window which he is invited to raise. At his right is a door leading to the passageway of offices of President, Sales Manager, Engineers, and General Manager. But it can be opened only when the information attendant presses a button.

This portable "console" provides remote control over microphone equipment



At his left, however, is a door leading into the Purchasing Agent's office at the northwest corner of the building. Thus when the information attendant notifies Mr. Swick that a salesman is present, it is easy for him to step out into the waiting room and consummate the interview promptly.

Nominally, salesmen's calling hours are restricted to the morning hours of 9:00 to 12:00. That regulation is intended to discourage casual visits from peddlers. Actually Mr. Swick not only is on hand daily forenoons, but is available for substantial salesmen and by appointment afternoons. But the injunction in the notice does tend to conserve a part of his time for concentration on other features of purchasing than receiving salesmen.

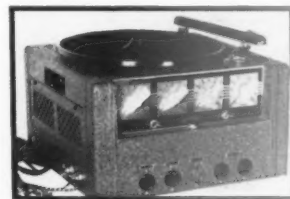
The Operadio purchasing department's attitude towards salesmen with a view to saving time for all concerned, was set by President Stone on the basis of his own calls on Purchasing Agents. This was in marketing the first portable radio from 1920 to 1927, and, in the later development of the business, in getting orders for loud-speakers from manufacturers of radio sets. When Mr. Swick took hold, Mr. Stone said to him: "Ed, I've gone in and talked with a Purchasing Agent and figured for him on a quantity of 100,000. Then the order came through for 5,000, which was all he had in mind anyway. That's bad. In your buying, tell the whole truth about every order and ask for a quotation on the quantity we actually require."

While Mr. Swick has grown with the Operadio

Manufacturing Company, and has developed gradually the methods of its purchasing department for quick results, his prior training and experiences in business were good seeds for such growth.

He graduated from Northwestern University at Evanston in 1920, his studies including courses in business practice. His first job was for three years in the scheduling and planning department of the Automatic Electric Company, manufacturers of telephones and switchboard equipment. Then for three years he was

Phonograph and amplifier—one of Operadio's many specialty products



in a plant on the west edge of Evanston manufacturing well supplies. There, besides making a survey of excess production of brass castings he did time-study work on changing machines and procedures in the factory. In 1926 he took charge of the equipment and storeroom of the chemistry department at Northwestern, and in 1928 went into its purchasing department in Evanston as a buyer.

In May, 1929, he sought an opening as a Purchasing Agent in industry, and found it with Operadio. Mr. Swick has not only studied the company's problems at St. Charles but has been active in attendance at the meetings of the Purchasing Agents Association of Chicago. When at the recent convention of the National Association of Purchasing Agents, Mr. Swick heard Mr. Knudsen say, "Get a scale," he recalled with satisfaction that he had for years been using the parcel post scale at Operadio headquarters to weigh samples of materials required for parts.

As an antidote for all his high tension work in purchasing for regular production and defense production, Mr. Swick goes in for cultivating flowers. He is a member of the St. Charles Community Planting Committee on its May Day drives for flowering crab trees. At his home in St. Charles, Mr. Swick has nearly an acre of ground, a large plot of which he devotes to gardening. But here is a place where he can do little speeding up. He has to wait to let nature take its own time for things to grow.

30% of the orders for loud speakers call for delivery within two days



And how do you suppose he entertains salesmen in these days when purchasing agents are said to be doing that? He gives them flowers. Seriously, Mr. Swick advocates that all purchasing agents should have hobbies, whether flowers or something else, in view of the pressure they are constantly under to place purchase orders quickly and to get quick deliveries.

BLUE PRINT FOR VICTORY

By Executive Order on January 16th, the President created the War Production Board, superseding the SPAB, and appointed Donald M. Nelson as Chairman with broad powers. On January 20th Mr. Nelson abolished the OPM and set up a new organization. The program is coordinated with the Allied Supreme Supply Council announced on January 27th.

DONALD M. NELSON
Chairman, War Production Board

Powers of the Chairman:

Exercise general direction over the war procurement and production program.
Determine the policies, plans, procedures and methods of Federal departments, establishments and agencies in respect to war procurement and production, including purchasing, contracting, specifications, construction, plant conversion, requisitioning, plant expansion and financing.
Perform the functions and exercise the powers previously vested in SPAB.
Supervise the Office of Production Management and direct such changes in its organization as he may deem necessary. (OPM abolished, January 20.)
Report to the President on the progress of war procurement and production. (The Army and Navy Munitions Board shall report to the President through the Chairman of WPB.)

SIX MAJOR DIVISIONS

Division of Industry Operations (New). J. S. Knowlson, Director. Mr. Knowlson was Acting Director of the Priorities Division, OPM, under Mr. Nelson.

This division has responsibility for conversion and operation of industry branches. It will establish from 50 to 60 specific industry committees. The first of these is for the automobile industry, and is headed by Ernest Kanzler, with full power to effect the conversion of the industry to war production.

It also absorbs the Priorities Division of OPM, and will handle the issuance of priority certificates.

Division of Purchases. Douglas MacKeachie, Director. Mr. MacKeachie held the same position in OPM, succeeding Mr. Nelson in that office.

Purchasing will be made by the Army and Navy as in the past, but civilian representatives of the Purchase Division will be placed in all procurement branches to work directly with military and naval officers on all procurement questions.

Division of Materials. William L. Batt, Director. Mr. Batt held the same position in OPM.

This division will handle basic materials, with the responsibility of making the supply go around. It will work closely with the Requirements Committee (also headed by Mr. Batt) on the broad principles of allocating materials among competing demands.

Mr. Batt is also the American representative on the Raw Materials Board of the Allied Supreme Supply Council, working with Sir Clive Baileau, Director of the British Purchasing Commission in the United States.

Division of Production. W. H. Harrison, Director. Mr. Harrison held the same position in OPM.

This division will also have civilians working directly with the Army and the Navy. It has the responsibility of seeing that industry as a whole gets the job done (as contrasted with individual industry problems which come under the Division of Industry Operations) and Mr. Harrison personally maintains liaison with Lt.-Gen. William S. Knudsen.

The former OPM Contract Distribution Division (subcontracting) is now a unit of the Production Division, with Walter Wheeler in charge. Floyd Odum, former chief, is named special economic adviser to Mr. Nelson.

Division of Labor. Sidney Hillman, Director. Mr. Hillman held the same position in OPM and was formerly Associate Director General of OPM, the latter position being now abolished.

Division of Civilian Supply. Leon Henderson, Director. Mr. Henderson held the same position in OPM.

STAFF DIVISIONS

Requirements Committee (New). William L. Batt, Chairman. The committee will include representatives of the Army and Navy, Lend Lease, Maritime Commission, and Civilian Supply Division.

The responsibilities of this committee are to determine the actual needs of all the above factors and to allocate materials according to the relative importance of these needs. Details of priorities and issuance of certificates will be handled in the Division of Industry Operations.

The key to the whole program is specific knowledge of requirements, which has not been available heretofore.

Planning Division (New). An advisory division without administrative or executive functions, composed of experts who think in terms of planning ahead and determining how the program as a whole can be improved.

This division will take over the engineering staff formerly operating under the Contract Distribution Division.

Statistics Division. Stacy May, Director. Mr. May was head of the OPM Bureau Research and Statistics.

Progress Reporting Division. Stacy May, Director.

Legal Division. John Lord O'Brien, Director. Mr. O'Brien was General Counsel of OPM.

Administrative Division. James A. Robinson, Director.

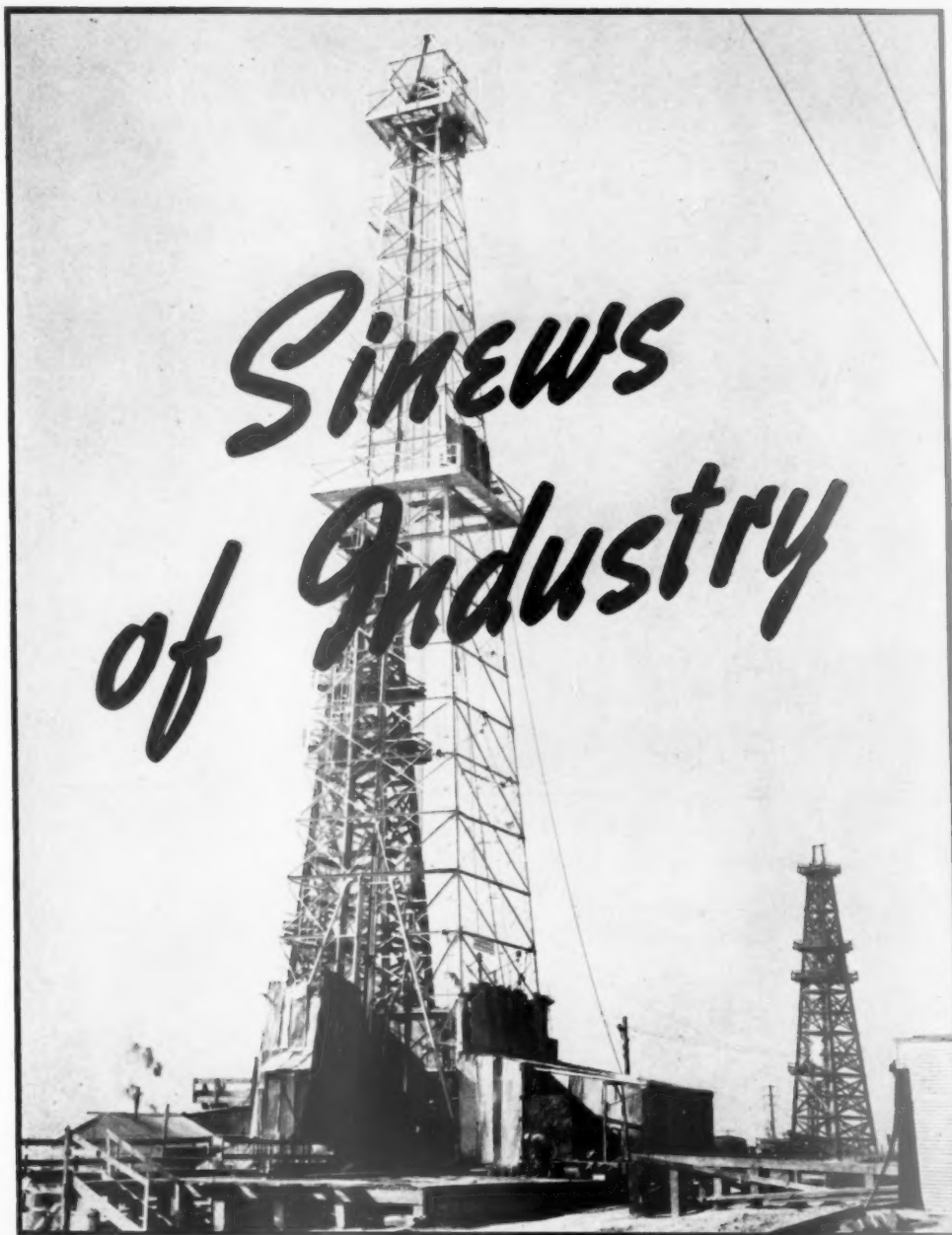
Information Division. Robert W. Horton, Director. Mr. Horton is Chief of the Information Division of OEM.

FIELD OPERATIONS

The War Production Board will take over the field offices formerly maintained by the OPM Divisions of Priorities and Contract Distribution, and will combine these to provide WPB representatives in major cities and industrial areas throughout the country, with power to speak for the board on all production problems.

To get efficient service and satisfaction, the wire sling should be considered as a special type of equipment, not merely as a loop of rope.

By J. M. GARRIS
Manager, Sling Department
Macwhyrte Wire Rope Company



A rotary rig drilling for oil uses wire rope (1 1/8" diameter) reeved through blocks for hoisting and lowering drill pipe and casing in and out of the hole when changing drilling bits and pipe is added as hole progresses.

WIRE rope can be accurately described as the sinews of Industry. It forms the tendons which make the modern skyscraper practical, articulates cranes for the aerial movement of loads and makes the absolute control of airships and dive-bombers possible. It is deeply interwoven into the fabric of our industrial and national life and no other single product has contributed so largely to American production and advancement.

Remove wire rope and the huge totals of business and commerce would be reduced to less than a tithe of the present amounts, while many of the comforts and products we now enjoy would disappear altogether. Without it our huge technological giant would quickly dwindle to dwarf-like proportions. We would again find ourselves living in the horse-and-buggy days and



Long lengths of wire rope are used to haul cars out of underground slope and shaft mines.

Coal and ore docks use large quantities of wire rope on bridges for loading and unloading.

mechanization would only be an impossible dream.

Nations move onward and upward only as they are able to implement themselves with better tools and mechanical devices. The battle is not to the strong but to the most ingenious. The long rifle buried the tomahawk and later won our national independence; the Merrimac and Monitor opened the way for mastery of the seas; and now the dive-bomber becomes the most potent engine of destruction. Better tools lead to better ways of doing things, and better tools are very often made possible by something that seems to be only remotely connected with them.

Wire rope is just such an expedient. Many people are unaware of its existence and very few realize the tremendous part it plays in human affairs. For example, deep well drilling would be impossible without it. This means we would be unable to tap the great pools of oil which lie beyond the reach of manila line drilling. Our yearly output of one thousand million barrels of oil would shrink to only a small proportion of present output. Refined lubricating oils, gasoline, greases and other machine-age necessities would be similarly curtailed, resulting in a complete break-down of manufacturing operations and disruption of transportation facilities.

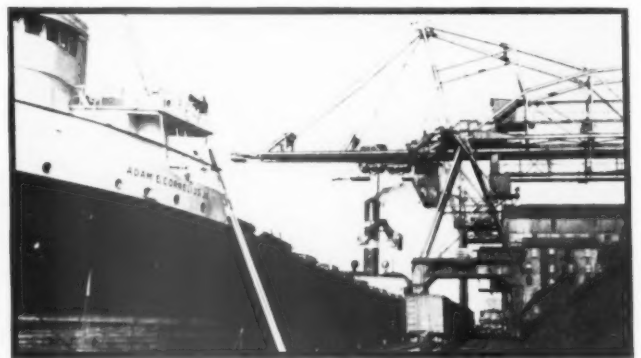
Much of our mineral wealth is deeply buried and accessible only by shaft-mining. Here again our output of coal, gold, silver, lead, copper and other ores would be painfully reduced by the absence of wire rope. Dredging and strip-mining are also impractical

without its use. Even rotary drilling rigs cannot function without it. Not only is it a prime necessity during the drilling operation but continues to be indispensable for swabbing and pumping duty to keep old wells producing. Marble, stone, slate and granite quarries cannot operate profitably without it and the great timber regions of the North West are ribboned with skylines and wire rope tramways to transport the logs to mills or adjacent streams. It is the "open sesame" to the Earth's resources in all lands and all climates, and captures stores that would otherwise be inaccessible.

Manufacturing, the world over, is equally dependent upon its use. Cranes, derricks, and electrically operated hoisting equipment, are universally designed for it and made possible by it. Canneries employ thousands of endless ropes for conveying purposes, and the same is true of fuel yards, coal docks and steel mills. Plants not using it in one way or another are the exception rather than the rule, and it very often forms a vital part of the finished product. The amount used varies from a few feet of counterweight rope on a machine tool to as much as two miles of rope in a single bomber.

Getting the Greatest Service

Rope making itself is more than an industry — it is an art, and this is true of all rope, whether made of wire or fibers. Considered in the relation of its component parts, good rope is wholly a matter of relativity. It can be properly defined as a kinetic machine and its manufacture calls for the precision of watch-making.



Good rope is something more than the combination of a certain number of wires, and it is a mistake to assume that all brands are alike. It is the one product likely to possess a latent touch, added by the maker, which differentiates it from all others and makes it difficult to counterfeit. The name of the maker, therefore, is very often the hallmark of quality. If he has been at it for a long time, it is only natural to assume he has finished his post-graduate course in the School of Hard Knocks, and can be relied upon to "know the ropes."

There are over a thousand distinct kinds of rope, taking various grades, materials and wire combinations into account. Many of these were designed for a single purpose, intended for use on a particular piece of equipment, and should not be considered unless recommended by the manufacturer.

This matter of recommendation also applies, in a general way, to all of the other ropes. It is good practice to have the rope maker check your equipment and specify the best type of rope for the purpose. Many good ropes have acquired a bad reputation because they were used in the wrong place.

Forty years of experience and study lead to the conclusion that only an extremely small fraction of 1% of rope failures are due to the rope itself. It is a well-established fact that few other products approach a more uniform quality of excellence, and there never was a time when better materials, finer equipment and more scientific accuracy contributed to its manufacture. The process of drawing the wire is a continuous proof-testing operation in itself, and the methods of fabrication readily lend themselves to the production of an article of great strength and dependability.

Rope service is therefore largely dependent upon the rope-using equipment and other conditions surrounding its operation. When trouble develops, the cause can usually be found right on the job, although it is often hard to localize the exact spot. Minor defects, and slight disrepair of equipment are often overlooked because, while obvious, they are considered too small to seriously affect service. It will be found, however, that their correction is all that is necessary to restore good service. Wire rope is a finely balanced mechanism and can be very easily thrown out of proper adjustment by faulty equipment, or improper handling. Equipment kept in good repair, plus proper operating conditions, will always equal good service.

Steel or iron rope in its present form goes back to about 1835 and the first machinery for making wire rope was made in England in 1840. The fundamental use of rope today is the same as it was hundreds of years ago. It is the connecting link between the motive power and the load to be moved. On account of its nature, it can transmit this load through any change of direction that may be required. Modern wire rope, with its high strength in proportion to its size and weight, is a flexible medium for work of this kind that would seem to be beyond much further improvement.

Wire Rope Slings

Wire rope first entered the sling field about 1910 and by 1915 it had firmly established itself for sling work wherever heavy lifting was done. As might be expected, bridge-builders and structural steel erectors were pioneers in its use. The earlier types of cranes were all equipped with chain, which has been universally replaced with wire rope, and the same transition is becoming more and more apparent with regard to slings. Initially, wire rope was unhesitatingly accepted for handling heavy loads and its dependability naturally led to its adoption for lighter loads, resulting in greater safety and faster handling.

During the early period of development it was common practice to use whatever wire rope was at hand and make the slings right on the job. The service rendered soon

68 foot tower, 12 feet in diameter weighing 132,000 pounds being prepared for loading cars. Easy handling made possible with two cranes assisted by braided wire rope slings harnessing tower.

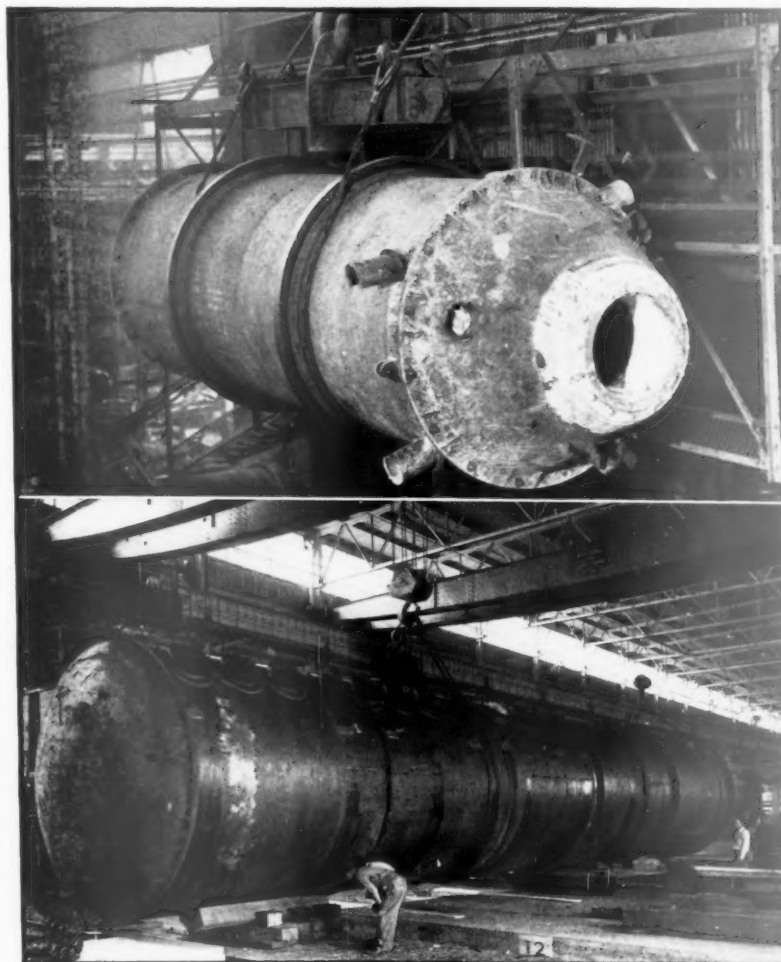
Rotary electric furnace weighing approximately 18 tons, easily removed for repairs with the aid of braided wire rope slings and crane equipped with wire rope.

established certain wire rope constructions as being superior for sling work and the fabrication of the sling itself began to receive more attention. This was confined at first to various improvements in splicing technique and design of special sling fittings.

The earlier use of wire rope required slings of abundant length and the conventional splice or zinc socket was not objectionable. The later demand for slings to handle small loads, and for shop work where head room required short slings, started a new development.

It soon became evident that greater safety would be secured if the sling could be made endless and the both splice and zinc socket eliminated. This was done by employing a single strand, about 14 times the finished length of the sling, or grommet as it is called. It is made by starting with a false core or ring having a circumferential length coinciding with the desired length of the sling. The strand is wound about this false core six times, when it will present the same appearance as a wire rope. The false core is then removed and replaced by the remaining length of strand, making a sling of great strength and uniform diameter of body.

The only objection to this type of sling was its lack of flexibility, which is comparable to that of a rope having a wire strand or metallic core. This was overcome to some extent by using a strand with a greater number of wires, but the demand for a still more flexible sling led to the development of the cable-laid grommet. The same technique as described for the rope-laid grommet applies to the cable-laid grommet, which only differs from the rope lay in that it is made by starting with a wire rope instead of a strand. The



resultant sling has many times the flexibility of a rope-laid grommet, with the additional advantage of a spliced core, making it truly an endless sling.

This endless feature was next carried a step farther by producing a braided sling body employing ropes of opposite lays to give the sling a neutral axis. All of the safety features resident in the cable-laid grommet are retained with the added advantages of much greater flexibility and resistance to kinking. The right and left lay ropes are braided in such a manner as to present all external wires of the sling in lines parallel to the sling axis. The importance of this feature lies in the fact there is always more or less endwise movement in all slings at the moment the crane tightens up the sling and assumes the load. It is this action that inflicts the most damage to chains and, unless the wires are in a position to present a sliding contact there is danger of similar damage to wire rope.

Safety Factors

All braided slings of this type terminate with natural eye ends and 25% of the cross-section of the sling body can be severed without impairing the catalog rating. The construction of the braided body is such that it will absorb shock loads without injury and it can be safely used until one or more of the parts begin to give way, because the load can always be laid down before the sling breaks. In other words, the sling parts very slowly.

Blocking, bagging and other protective devices are not needed, except on sharp cutting edges, because the braided body has a tendency to flatten and spread, so that four or more ropes engage the load with a gripping contact, like the fingers of a human hand.

Slings of this kind are now obtainable with either



Aircraft of all kinds utilize high strength aircraft cables for primary motor, aileron, rudder and bomb release controls, retractable undercarriages and special bracing.

round or flat body and with any reasonable number of parts. The use of small ropes increases the flexibility to a remarkable degree, making a sling which hugs the contour of the load like a silken rope.

Wire rope slings are used in many ways with various kinds of fittings necessary to adapt them for handling problem loads. These fittings often present a problem which appears to defy solution. This is particularly true of foundry work, where the hooks required are usually of the slender type with an extra wide throat opening. Such hooks are inherently weak, even when properly loaded, and many lifting operations use only the hook points, thus overloading the hooks and incurring frequent repairs.

Since this type of loading cannot be altogether avoided, slings for foundry service should be designed to permit the use of interchangeable fittings. This can be done by using flame cut hooks and flame cut load links, attaching them to the sling by means of shackles.

For general work, however, greater safety can be secured by having the sling encircle the load, and eliminate all fittings other than thimbles. Fittings of all kinds are subject to wear and fatigue and often deteriorate until they become the proverbial "weakest link." The added weight also makes the sling cumbersome to handle and slows up its operation. Braided slings and grommets terminate with natural loop ends and provide a light sling which not only encircles the load but also encircles the crane hook, resulting in maximum safety.

The safe working load for wire rope and wire rope slings is usually computed with a safety factor of 5, or 20% of the ultimate strength after deducting the losses due to friction of reeving and sling fabrication. While an ample safety factor is of prime importance wherever danger to life and property is involved, yet the factor adopted should always be within reason. The higher the safety factor the more cumbersome the sling, and its use often entails greater hazard than would be encountered by a lighter sling.



Lifting a 120,000 pound platen for placing in position on a press, specially designed braided wire rope slings with flame cut hooks do the job quickly with maximum safety.

CONSERVE PAPER



PAPER is scarce. Just how scarce, there are no really accurate statistics to tell, for there are two important variables which may make the difference between a little surplus and a deficit. Consequently, even the most authentic reports of tonnages, capacity and operating rates fail to give the entire story. First of these variables is

prospective demand. Government departments, which loom as the largest single factor as users of paper and as buyers of products which must be packaged or wrapped, can give only the most general estimates of their requirements in the year ahead. Industrial and commercial users can come closer, but their estimates have been completely upset and revised sharply upward by the increased requirements of the Victory production program; potential savings through conservation are also very uncertain. The second variable is our pulp supply. We know that imports from European sources have been practically shut off, and we can estimate domestic production capacity, but we do not

know what proportion of this production will be diverted to the manufacture of rayon and explosives.

There is also an unknown quantity in the equation, and that is the volume of advance buying on the part of important consuming industries. It is presumed to be rather large.

Paper is a very broad classification. It covers a wide range of types and grades, made for a wide variety of uses, each of which is practically a separate industry and a separate problem. From the general industrial standpoint, papers and paperboard for wrapping and packaging are a most important consideration, and supplies in these classifications are very tight.

Waste paper is exceedingly scarce, and this is an essential raw material for the manufacture of paperboard, roofing materials, and other products essential to the war effort. Price ceilings on waste paper and paperboard were among the first to be imposed by OPA, on October 1, 1941, which had the effect of temporarily slackening the collection and flow of these materials through regular dealer channels, but this latter situation has since been corrected. The shortage was sufficiently acute to prompt an extensive advertising campaign on the part of the consuming industries, urging its collection and prompt return to the mills. Old paper is also one of the four main classifications in the general salvage campaign conducted by the Bureau of Industrial Conservation, which is now effectively reaching into every community of the nation and enlisting the cooperation of every organization and every individual.

I. CONSERVATION IN USE

Paper is one of the most carelessly used of all commodities, and a campaign of care and economy in the ordinary miscellaneous uses of papers frequently results in savings at the source amounting to 25% or more. Some of the obvious means of effecting such conservation are:

- Elimination of unnecessary office and factory forms and correspondence.

- Elimination of unnecessary carbon copies of necessary forms and correspondence.

- Reduction in the size of letterheads, forms, envelopes, etc. Particularly in internal correspondence and temporary forms, this represents a minimum of inconvenience. Smaller type faces and closer spacing can be adapted to the new stationery sizes.

- Standardized sizes of forms, booklets, advertising matter, to cut without waste from standard paper sizes.

Closer estimates of requirements on circulars, forms, etc., to avoid overruns which will represent sheer waste.

Utilization of obsolete printed matter which has one side blank, for "scratch paper." Padding such forms and trimming to ordinary desk sizes adds to convenience in use.

Another field that offers great opportunities for conservation of paper and paperboard is in the field of packaging. Redesign of cartons and boxes can show important savings. The use of internal unit packages can sometimes be eliminated or curtailed. Multiple wrappings can be replaced by a single package of adequate strength and protective qualities. Greater use of large sizes means less packaging material per unit of product. One complete shipment in place of several partial shipments or of several repetitive small orders can similarly save in the use of packaging materials.

II. SALVAGE FOR USE

First among the salvage uses of paper is in the packaging and shipping rooms, as padding material. This cannot be done indiscriminately, for loss or damage to goods in transit, wasted production time represented by these claims, etc., will quickly outweigh the advantages of paper salvage. Standards as rigid as in the use of specially manufactured paddings and packaging methods should be adopted. Usually it is necessary to go back over the steps which were con-

sidered when the original packages were selected, passing only over such factors as special colors and sales appeal which can be discarded "for the duration." But the goods cannot be made to support the box unless those goods are stronger than the box; fragile materials must still have packages which are self-bracing; parts or products which were anchored to the package must still be so anchored; "floating in the box" products still must float; nested goods must still

have the protection which will prevent marring or binding.

There is much room for common sense and for tests in selecting the type of paper scrap to be used for padding. Stiff rag-content bond scrap has more spring and will retain its life longer than newsprint. Antique finish papers are easier to handle and are less likely to crumple into sharp, hard corners that can scratch a painted surface. In general, the same factors which governed the selection of commercial padding materials will apply to picking out types of paper scrap most useful for the same purpose.

Shredded paper has come into extensive use as a packing material, and is now more available than some other types of material. Many plants have found it economical to install their own shredding machines, which also results in greater control over the type of paper used. Sometimes arrangements can be made with commercial shredders to turn in paper scrap and pay only the charge for shredding. The shredding plant is generally in a position to provide any desired grade, or a mixture, to yield the necessary packaging and protective characteristics.

Exterior wrappings may also be helped by the use of salvaged paper for padding under the outside wrapper, during the shortage of burlap and other wrapping materials. It may increase gross weight and size, thus increasing shipping costs, but may return this cost by

preventing loss and damage while conserving burlap.

Packages and shipping methods which use salvaged papers should be tested as rigidly as original package designs. Drop tests from platforms, vibration tests on reciprocating mechanisms, etc., should be applied before adopting this practice. The use of paper salvage does not imply an attitude of "any port in a storm and hope for the best."

Package engineers can help with this development, showing how to brace exteriors and interior partitions so that the use of salvaged paper is less risky, how to combine salvaged paper with other commercial packing materials which are still available, and how to solve waterproofing problems which have arisen from some packing material shortages.

Re-use of corrugated and fiber cartons is a direct and effective means of conservation which is being increasingly adopted in industry, and which is accepted today as a sensible emergency measure. If this is not practicable in a given case, return of such cartons and boxes to the original manufacturer can frequently be arranged, particularly when the supplier is in the same area and the returns can be made by his truck instead of returning empty from making a delivery. In some cities there are "exchanges" which will now handle cartons as well as other types of packages, making possible the maximum re-use of such cartons as well as offering a greater return than as scrap.

III. SCRAP PREPARATION

Waste paper scrap is elaborately classified for sale to the mills, thirty-seven separate grades being recognized in the price schedules of OPA:

No. 1 Mixed Paper
No. 1 Baled News
Overissue News
Old Corrugated Containers
New Corrugated Cuttings
Box Board Cuttings
White Blank News
Extra Manilas
New Manila Envelope Cuttings
One cut New Manila Envelope Cuttings
Manila Tabulating Cards, Plain Manila Color, free from groundwood
Manila Tabulating Cards, Colored, free from groundwood
Manila Tabulating Cards, Groundwood, Plain Manila Color
Manila Tabulating Cards, Groundwood, Colored
No. 1 Hard White Shavings, unruled
No. 1 Hard White Shavings, ruled
Hard White Envelope Cuttings
One Cut Hard White Envelope Cuttings
No. 1 Soft White Shavings
One Cut Soft White Shavings
Misc. Soft White Shavings
No. 1 Fly Leaf Shavings
No. 2 Fly Leaf Shavings
No. 1 Groundwood Fly Leaf Shavings
No. 2 Mixed Colored Groundwood Shavings
Mixed Colored Shavings
No. 1 Heavy Books and Magazines
Mixed Books
Overissue Magazines
No. 1 Mixed Ledger (Colored Ledger)
No. 1 White Ledger
No. 1 Assorted Kraft (Old Kraft)
Triple Sorted No. 1 Brown Soft Kraft
Mixed Kraft Envelope and/or Bag Cuttings
Kraft Envelope Cuttings
New 100% Kraft Corrugated Cuttings

Prices on these various grades range from \$14.00 to \$67.50 per ton, indicating the advisability of careful grading for maximum usefulness and for maximum return. Except for scrap which comes directly from production processes, printing, ruling, trimming,

binding operations, etc., resulting in appreciable quantities of "pedigreed" scrap, such close grading is impractical for the ordinary plant, but the classification gives an idea of the direction to be taken rather than lumping all paper waste into the lowest classification of "mixed" scrap. The extent to which sorting for higher classifications and prices is economically feasible depends on the quantities to be handled, floor space available, low cost help, etc. Sorting which consists merely of separating cartons and kraft from miscellaneous papers is a simpler matter and well worth while. Fiber containers should be separated into kraft and jute, the former commanding about 50% better price.

Objectionable papers which should be excluded from scrap include carbon, waxed, paraffined, oil treated, glazed, parchment, asphalt, tar, wall, friction board, book covers, cloth bound, heavy cores, tympan, pressboard, used billboard stock, paper-wrapped excelsior, felt furniture pads, uncut printer's rolls, paper twine and strings.

Foreign materials include every non-paper substance that can not be manufactured into paper, including, but in no way limiting the generality of the previous paragraph, cellophane, rags, rubbers, strings, vulcanized fiber, metals, and rubbish of all kinds.

Bins assigned to the various types of paper waste, and a baling machine, are first requisites to convenience and efficiency in the accumulation and handling of scrap papers. There should be an inspection by the waste material dealer and approval of the classification methods, to secure the best return, for most reliable waste material men prefer to do their own sorting and baling for resale and final shipment to the mill. The dealer's standing and reputation with his own customers is packed inside of every bale. The prices he can get, and consequently the prices he can pay, depend on what the mill thinks of him. And carelessness is as bad as dishonesty in making up a bale.



a public utility company, for centralized purchasing in government. My thought was that a dollar saved by the Purchasing Agent would be a dollar saved for the taxpayer!

And then I went to work for the County of Los Angeles as the Purchasing Agent, some six years ago; worked hard; applied all of the knowledge that years of earning my salary with a private corporation had taught me. Naturally I became proud of the fact that notable savings were made in hundreds of different lines. Buying for periods of quarter-year, half-year, and year, saved money. Buying against specification, Federal, State, ASTM, or our own based on the standards of railroads and other people, saved money. Inspection, to ascertain definitely the quality we sought was actually delivered, saved money. And so proudly I published the annual report of the savings estimates, based on the facts of the purchasing volume as against the purchasing cost.

The governing body naturally joked with me. If hundreds of thousands of dollars had been saved, why hadn't the costs gone down? Taxpayers Associations would ask: if these thousands had been saved, why the addition to the cost of government?

My immediate superior, formerly a railroad man himself and a successful business man, now a member of Congress, would ask, "How much did we save today and for whom?" At first, I thought he was referring rather jokingly to the taxpayer. But at the end of the year, I was one of the thousands of government employees who were asked, "Why the tax rate increase?" And I couldn't answer.

So the flow of materials by *quantity* instead of money was studied. If a Department requisitioned 50

BUDGETING BY ITEMS SAVES DOLLARS

By **COL. WAYNE R. ALLEN**

Purchasing Agent, County of Los Angeles

Quantities, Not Money, are the Basis of Los Angeles County's Purchasing Budget

MUCH has been preached about the necessity of centralized purchasing procedure. The statement was made that tax dollars were saved by the establishment of a centralized purchasing office. As a purchasing agent for a private corporation, I believed this trite slogan "Centralized Purchasing—A Sentry at the Tax Exit Gate."

I helped work as an officer of a local Purchasing Agents' Association, although at that time buying for

typewriters, and we bought that quantity for 25% under the budget allowance, a later requisition for 12 was submitted. When this was disapproved, then a later requisition for new calculators, executive desks, or some similar luxury was submitted by department heads. Now having come from a public utility where even then, dollars counted, such luxuries would have caused the local government officials to have started a campaign for reduced tariffs.

And so with the flow of supplies. If prices of a much consumed commodity were materially reduced, orders in excess of normal consumption of some luxury, were submitted. And I have noticed in my brief contacts with State and Federal Governments, that most officials believe that it is their duty to expend every dime of a budget to justify a larger budget the succeeding year.

The Purchasing Agent suggested to the governing body that the budget be established in terms of *units*; that while the Budget Law of the State required that the appropriation be made in terms of dollar value, that the *units* be also stated, and by *ordinance* the Board *ordained* that the Auditor would consider ac-

counting for purchases by the *unit* only, and that the *difference* between the estimated dollar value and the unit cost, be frozen into the general accounts and carried forward as a surplus.

Thus, if a Department had a budget item for 10 necessary calculators at \$325 each, and an appropriation of \$3,250, only the item of 10 calculators was established in the budget. The \$3,250 was for the purpose of estimating the tax levy against John Q. Public. Now by bidding *all* requirements of calculators on an "all or none" basis, having determined by this kind of budgeting the total *quantity* of calculators required, 20% was saved. Not only \$650 on this particular departmental budget, but hundreds of more when applied against all requirements. This same thought can be carried on through the whole field of governmental requirements.

In our County, through the cooperation of a very modern Auditing or Controlling Department, the principle of the actual *transfer* of Departmental Funds from the Department to the Purchasing Agent was accomplished, so as to end all doubt as to whether savings belonged to the Department or to the taxpayer. On the first day of each July, the beginning of the County fiscal year, all funds for the purchase of all materials are transferred to the Purchasing Agent. The funds no longer are Departmental Funds; the funds are only *credits* for the purchase of supplies within the *quantities* determined for the budget.

For three successive years, under this operation, there has been a large surplus in unused funds, which surplus has aided materially in reducing the tax rate of the County of Los Angeles for three successive years.

This year, doubters believe that the continued spiraling of prices will operate against this system as a principle of supply and budgeting. Contrary is the case. Having full knowledge of the requirements for a full year, our County's total purchases were made last July and August. Mindful of the full import given us by Donald Nelson, Leon Henderson, George Renard, Philip Reed, and others at the Chicago Convention of the National Association of Purchasing Agents, the County of Los Angeles was careful to see that purchases were made, properly scheduled for delivery, for the fiscal year. Except for dairy products (where the price was established by an industry bloc that was not based on economics, necessity, a fair profit basis, or a mind to the interest of the consumer), meats (on which a forward buying method can never be exercised), and a few items of surgical equipment or apparatus (where so-called "fair trade" laws peg a price), the cost of furnishing materials to the County has been *less* than the budgeted allowance, except for the dairy, meat and surgical fields as outlined above.

Of course, to establish such an unusual procedure

in government (private business would have this type of procedure as a matter of course), it is necessary to establish a *base* year or period. The Purchasing Agent for the County of Los Angeles took the year 1936-1937 as the base year. This was the year of the up-trend in commodity prices. This was the year of the maximum application of cartels, trade-association application of the Robinson-Patman Act. Prices at the end of 1937 were at a high over the preceding seven year period; higher than the index of 1929 in Southern California.

In budgeting from a Purchasing point of view for 1942-43, the Purchasing Department prognosticates the price condition from the preceding year. Dangerous, of course. And the budget for the County of Los Angeles (and we spend over a million dollars each year) will be based on this prognostication. If prices spiral beyond the estimate made, then I'll be wrong, the budget will be out of estimate.

But reliance must be given to those in high places in Purchasing and economics in our Nation. Douglas MacKeachie, Director of Purchases of the Office of Production Management has said: "My contact with the Office of Price Administration has fully convinced me of their serious intention to stabilize all prices. Sound regulations have already been promulgated on many hundreds of items. The OPA has done, and I believe they will continue to do, everything in their power to prevent price spiraling. All products, including food products, will go under a price ceiling should the necessity arise."

Costs for our next fiscal year will of course be on a higher schedule. As sufficient taxes must be levied against property to pay the bill for providing police (and on the Pacific Coast this year this will be higher on account of the Japs being further away than Pittsburgh, Pa., but our people are more jittery), provide for more people in the hospital (on account of an increased population and not on account of the Japs) and provide for more people in jail, etc., our County budget might be increased. The increase, if any, will however be much, much less than if the total savings from budgeted expenditures of Departments had not, year by year, been used to accumulate surplus, as against either of the doubtful operations: (1) of reducing department's budget without full facts, or (2) allowing the department full budget and permitting full expenditure thereof whether justified by price conditions or not.

So far, this has been a recitation of achievement.

There is a moral to the story, of course, for every story should have a moral: John Taxpayer is each one of us, and no dollar should be levied against any or each of us, unless necessary. Proper control of tax dollars by Purchasing men might help save a dollar. Might win a War!



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BY CHARLES FORD



**When everybody else in the game
is getting hot about shortages and
an inventory boom, it takes cour-
age to face the cold facts and fol-
low a logical course**

NOW is the winter of our discontent made a blamed sight worse by that annual itch, the inventory. How much stuff have we on hand? How much of it is good; how much maybe ain't so good?

We spend a lot of time finding out what and how much there is. We spend weary hours figuring it up, separating sheep from goats; and, according to the percentage of goats, wonder how we got that way. What sort of microcephalous idiot could accumulate such a hopeless lot of tripe? We mull over the whole mess, wondering how on earth we're ever going to get the money out of it. We have to think how we can trim things so Uncle Sam won't get too fussy about the tax statement; how the boss will surely think we ought to produce more stock to make a better showing; and make some bossified remarks about having so much mazuma tied up in stock. Then there is the perpetual and not always kindly feeling of the sales department that when you have a good stock, and the market is up, you should give them actual, not replacement costs, so they can bid closer; and if it's the other way, market sliding out from under you, the sales department is much in favor of replacement costs in figuring.

There just ain't no satisfying nobody.

Take Stock of Morale

I think what we might call a moral inventory is a darned sight more important than the physical one; but it doesn't get into the financial statements. Through all the year's vicissitudes, has the company kept its financial status? Has it handled its commitments and deliveries so that all its customers are held in fast loyalty? And what is the morale of the staff, from sweeper to superintendent? It seems to me this last is one of the most important stock-taking jobs.

And what, all this time, is the Purchasing Agent's morale? There is a lot of difference between the importance of a purchasing job now, and twenty years ago. Then, the Purchasing Agent was a sort of verminiform appendix to the business. Now, he is the incumbent of a man's job.

But, assuming he has gone through the year, han-

dling his job so that wheels have not stopped, no reasonable orders have been refused because of lack of material, costs have been favorable; and there has been no more than healthy friction with sales and manufacturing departments (those birds have to do just about so much kicking anyhow)—what does the year's tale add up to?

In the fateful year of 1920, when our props got kicked out from under us so fast we were standing on our ears most of the time, the purchasing officer got a pretty drastic test. Maybe he did keep the wheels going, and the orders coming, but what did his inventory look like?

Accepting the Loss

As 1921 neared, one boss called in his Purchasing Agent. They had what looked like the very devil of a stock, some sold on contract which was secure and needed for operations, and what seemed plenty on hand to take care of the in-between orders.

"Dick," the boss said, how much are we going to be nicked on our inventory this year?"

Dick replied: "Impossible to tell exactly at the moment, but I should say about \$125,000."

The boss reflected a minute. "Well, Dick, that doesn't sound too unreasonable under the conditions, but I hope you can trim it a little. See me when you get the figures."

The loss actually figured about \$40,000, quite a lot better than reasonable. But Dick never told the boss the real story of how he happened to get out from under. Telling about it afterwards, he disclaimed any particular wisdom, or foresight, or judgment. He didn't pyramid orders, and he did stick to those suppliers who had shown reason to be trusted to the limit of their ability; and he didn't give them much chance to forget his orders.

But, in the year of our Lord, 1919, his feet began to get very, very cold. Everybody else was whooping it up; everybody was buying his head off; everybody was dead sure this thing was going on indefinitely and some day there wouldn't be anything like goods enough



Uncle Sam got fussy about the tax statement

to go around. As I said, he claimed no superiority of judgment, but he did have an aggravated case of frigidity in his pedal extremities. He even took an electric heater pad to bed with him. But daytimes he spent much energy in buncoing the sales department into using stuff on hand in place of what would normally be ordered; now and again he took a chance at substituting on his own hook, considering that what the sales manager didn't know wouldn't hurt him; and he sold a lot of his stock to some of his more sanguine brothers in purchasing. And he had to keep gum shoes on his frigid feet so their noise wouldn't give him away. Most of his associates had that whoopee feeling about the market, and were afraid the goods would all be gone.

Somehow he worried through 1920, whittling down his stock as he could, keeping a bold front to the world, managing to keep everything running. Before the year was far gone, things began to ease, then slid downhill as if on runners. When he tore the December sheet from his calendar, and proceeded to make up his report to the boss, his feet began to feel more comfortable; and the cure was complete when the boss handed him a bully bonus check.

The Subconscious Mind

Apparently it pays to have a pair of feet sensitive to downward changes of temperature. I haven't talked to any psychologists about cold feet, though in the sense we are talking about, it is psychological rather than physical. I imagine the psychological sharps would say that cold feet are the result of a number of conditions working together and registering on the sub-conscious mind. The student of his business, in the purchasing field, mulls over apparently conflicting manifestations in the markets, keeps track of fluctuations in the demand for his house's product, watches the state of mind in the sales department, the boss's enthusiasms or glooms, the opinions of his suppliers, the tone of the press,—the news from anywhere and everywhere. He



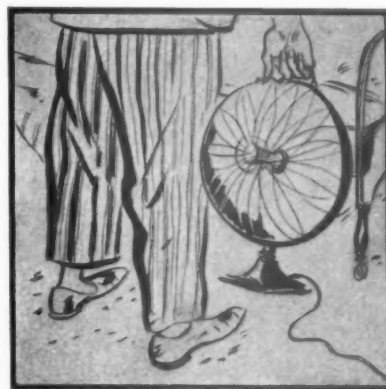
Cold feet are a healthy symptom when the market looks too good

mulls over the mess of conflicting ideas and can't make head nor tail of them. Then, from sheer weariness he relaxes, the good old sub-conscious mind takes charge, and communicates to those articulated extremities bent out for him to walk on, that chilly sensation which will not down, and insists on being translated into a mandate to take in sail.

Such being the case, who *did* strike Billy Patterson, and, how old is Ann?

It's really surprising how many successful business judgments are the result of some such process as this. Back to the hectic years of the last war, a certain commodity in daily household use got the jitters. The demand was over-powering, hoarding was rife and the price skyhotted to Heaven. The dozen or so manufacturers of this particular commodity got their heads together and succeeding in scaring almost everybody using or distributing the stuff to sign firm-price contracts for 1920, at the highest figures ever known for that particular product.

So far as I know, there was just one lone individual, whose house was one of the heaviest buyers, but whose toes underwent the finest frosting of his whole career. His associates, president and directors and department heads, were insistent that he sign the contract—the goods would all be gone, and the procession pass by



He even took an electric heater to bed with him

their door leaving nothing but scrap paper and soiled ticker tape. The directors practically ordered him to sign and keep them in out of the wet. But he ducked and evaded, and managed to keep them going, until the market suddenly showed signs of easing.

The manufacturers, trying to soften the blow to forestall difficulties in collecting, billed their product at the market, attaching to the invoice a trade acceptance of the difference between contract and market prices. What a wholesale nicking there was! Those trade acceptances had to be taken care of. The contracts were cleverly drawn, and there was no loophole of escape save to go out of business; and a lot of them had to quit, whether they wanted to or not.

But our friend's associates wisely refrained from pushing him, except one director who lost his job, and whom our friend replaced—and he coasted along, taking his competitors' surplus off their hands at the market from day to day. The last invoices on the deal were exactly one-third the contract price, and the trade acceptances two-thirds. That buyer saved his house a clean million bucks.

To this day nobody knows, least of all the buyer himself, just how his pedal extremities became so congealed, but his house learned a few things.

One was, to respect a well developed case of cold feet when the market looks too good to be true.

THE MARKET PLACE



Quotations on basic materials for
carloads or mill shipments, with
comparative prices quoted one
month ago and one year ago

(*denotes ceiling price)

	Feb. 1 1941	Dec. 22 1941	Jan. 20 1942
ACIDS			
Acetic, 28%, cwt.....	2.23	3.18	3.18*
Muriatic, 18 deg., cwt.....	1.50	1.50	1.50
Nitric, 36 deg., cwt.....	5.00	5.00	5.00
Oxalic, Works, cwt.....	10.75	11.25	11.25
Phenol, Works, cwt.....	14.25	14.25	14.25
Sulphuric, 66 deg., ton.....	16.50	16.50	16.50



BUILDING MATERIALS

Brick, N. Y. dock, per M.....	12.00	12.00	12.00
Cement, f.o.b. plant, bbl.....	2.15	2.15	2.15
Glass, single B, per box.....	2.70	3.30	3.45 ↑
Lime, per bbl.....	2.85	3.00	3.00
Nails, wire, per keg.....	2.55	2.55	2.55*
Oak flooring, per M. ft....	83.00	85.00	85.00
Southern pine, K.C., per M. ft.	29.06	40.50	40.50*

CHEMICALS

Alcohol, denatured, gal.....	.32½	.38	.65* ↑
Alum, potash, cwt.....	3.75	3.75	3.75
Alumina Sulf., Comm., Works, cwt.	1.15	1.15	1.15
Ammonia, aqua, 26 deg., drums .....	.02¼	.02¼	.02¼
Arsenic, White, cwt.	3.50	4.00	4.00
Red, cwt.	nom.	nom.	nom.
Barium Chloride, ton	77.00	77.00	77.00
Carbonate, ton	56.50	56.50	56.50
Benzol, pure, gal.....	.14	.15	.15
Borax, powd., ton.....	48.00	48.00	48.00
Chlorine, cwt.	1.75	2.00	2.00
Formaldehyde, lb. ....	.05¼	.05¼	.05¼*
Glycerine, drums, lb.....	.12½	.18¼	.18¼*
Lead acetate, white, broken, cwt.	11.00	12.50	12.50
Nickel sulphate Double .....	.13	.13	.13
Single .....	.13	.13	.13
Potash Caustic, solid .....	.06¼	.06¼	.06¼
Permanganate .....	.20	.20½	.20½
Sal Ammoniac Gran. white, cwt.....	4.50	4.50	4.50
Gran. gray, cwt.....	5.75	5.75	5.75

	Feb. 1 1941	Dec. 22 1941	Jan. 20 1942
SALT			
Salt peter crystals .....	.086	.091	.092 ↑
Soda Ash, 58%, light, bulk, cwt...	.95	.90	.90
Caustic, 76%, solid.....	2.30	2.30	2.30
Sal, Works, cwt.....	1.10	1.10	1.10
Sodium Bicarbonate, cwt.	1.70	1.55	1.55
Tri-Sodo. Phosphate, cwt....	2.10	2.90	2.90
Silicate, 60 deg., cwt.....	1.65	1.65	1.65
Sulphur, Comm., cwt.....	1.60	1.60	1.60



COAL & COKE

Anthracite, stove, mines.....	6.25	6.75	6.75
Bituminous, Cleaf, mine run...	2.50	2.70	2.70
Beehive Coke, Connellsville...	5.00	6.00	6.00
By-product Coke, Newark....	11.85	12.45	12.45*

FERTILIZERS

Muriate potash, 62-63%, per unit K 20.....	.53½	.53¼	.53¼
Sulphate potash, 90-95%, bags.	36.25	36.25	36.25
Nitrate soda, bulk.....	27.00	27.00	27.00
Sulphate ammonia, dom., bulk.	29.00	29.00	29.00
Steamed bonemeal, 3 and 50 per ton	32.50	37.50	37.50

GRAINS

Barley, malting, bu.....	.75½	.85½	.91¼ ↑
Corn, No. 3, yellow, bu.....	.60¼	.75½	.81 ↑
Oats, No. 2, white, bu.....	.37½	.56¼	.60¾ ↑
Rye, No. 2, Western, bu.....	.62½	.84½	.96¾ ↑
Wheat, No. 2, hard winter, bu.	.77	1.15¼	1.24½ ↑
Flour, spring patents, 196 lbs.	4.75	6.45	6.80 ↑

HIDES

Light native cows, lb.....	.13	.15½	.15½*
Heavy native steers, lb.....	.13½	.15½	.15½*
Calfskins, 5-7 lbs. per skin....	1.75	1.65	1.65*

IRON & STEEL

	Feb. 1 1941	Dec. 22 1941	Jan. 20 1942
Pig iron, foundry No. 2.....	24.00	24.00	24.00*
Pig iron, basic, valley.....	23.50	23.50	23.50*
Cast iron pipe, New York.....	52.20	52.20	52.20*
Forging billets, Pittsburgh base	40.00	40.00	40.00*
Sheet bars, Pittsburgh base....	34.00	34.00	34.00*
Wire rods, Pittsburgh base....	40.00	40.00	40.00*
Cold rolled sheets, cwt., Pitts- burgh base	3.05	3.05	3.05*
Hot rolled annealed sheets, cwt., Pittsburgh base.....	2.10	2.10	2.10*
Cold rolled strips, cwt., Pitts- burgh base	2.80	2.80	2.80*
Hot rolled strips, cwt., Pitts- burgh base	2.10	2.10	2.10*
Tin plate, cwt., Pittsburgh base	5.00	5.00	5.00*
Bars, cwt., Pittsburgh base....	2.15	2.15	2.15*
Shapes, cwt., Pittsburgh base..	2.10	2.10	2.10*
Bright wire, cwt., Pittsburgh base	2.60	2.60	2.60*
Ground shafting, cwt., Pitts- burgh base	2.65	2.65	2.65*
Rails, ton, Pittsburgh base.....	40.00	40.00	40.00*



METALS, NON-FERROUS

Aluminum, virgin ingots.....	.17	.15	.15
Antimony, American, spot.....	.14	.14	.14
Copper			
Electrolytic .....	.12	.12	.12*
Chromium, 97%, spot.....	.84	.84	.84
Lead, E. St. Louis.....	.0535	.057	.0635
Nickel, ingot .....	.35	.35	.35
Quicksilver, flask	167.00	215.00	203.00 ↓
Silver, bars, N. Y., per oz....	.34¾	.34¾	.35¼ ↑
Tin, Straits, spot.....	.5045	.52	.52*
Zinc, E. St. Louis.....	.0725	.0825	.0825

METAL PRODUCTS

Copper, wire, bare, cwt.....	15.375	15.375	15.375
Yellow brass sheets, high.....	19.48	19.48	19.48

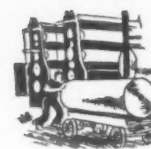


NAVAL STORES

Turpentine, gal.....	.49½	.80	.82½ ↑
Rosin, Grade B, cwt.....	2.20	3.65	3.75 ↑

PAINT MATERIALS

White lead, dry, basic, car- bonate .....	.07½	.07½	.07½
Carbon black .....	.03075	.03425	.03625 ↑
Shellac, orange .....	.16	.32	.32*
Linseed oil .....	.097	.111	.113 ↑



PAPER

News, roll, ton.....	50.00	50.00	50.00
Book, M. F., cwt.....	6.40	7.40	7.40
Wrapping, northern, cwt.....	5.25	5.25	5.25
Wrapping, southern, cwt.....	4.25	4.50	4.50
Wrapping, manila jute, cwt....	8.25	8.75	8.75
Chip board, No. 1, ton.....	30.00	45.00	45.00*
Wood pulp, mech., ton.....	34.00	36.00	36.00
Wood pulp, sulph., No. 1, cwt.	3.17½	3.17½	3.17½



PETROLEUM

Crude, Mid-Continent	1.02	1.17	1.17
Crude, Penna.	1.89	2.30	2.30*
Gasoline .....	.05½	.08½	.08 ↓
Bunker Oil C.	1.25	1.35	1.35
Kerosene, 41-43 grav.....	.053	.053	.053
Penn. bright stock, light, 25 P. T. ....	.21	.36	.36
Penn. cylinder oil, 600 flash..	.18	.26½	.26½



RUBBER

Smoked sheets .....	.19½	.22½	.22 ↑
(† Rubber Reserve Co. selling price)			



TEXTILES

Cotton middlings, Galveston...	.098	.1696	.185 ↑
Cotton yarns, 22s.....	.28	.39½	.415 ↑
Print cloths, 38½", 64 x 60....	.05¾	.08224	.08598* ↑
Sheetings, 37", 48 x 48.....	.065½	.09375	.09875* ↑
Wool, fine combing, ½-blood..	1.02	1.15	1.15*
Worsted yarns, French 240s...	1.80	nom.	nom.
Worsted yarns, English 2-40's..	1.82½	nom.	nom.
Silk, Japan, double ex. cracks..	2.53	3.08	3.08*
Rayon, viscose, 150, 40s.....	.53	.55	.55
Burlap, 10½-oz., 40" .....	.0835	.1150	.1150*
Hemp, Manila .....	.06¾	.10¼	.10¼

Look Beyond the TRADE-MARK ...Look at the MOTOR!



YES, we are proud of the F-M trade-mark. But we are far more proud of the kind of motor on which that trade-mark appears. We know, and you know, that it's the motor and not the trade-mark that runs machinery.

That's why we ask you, when buying, to look beyond the trade-mark—*look at the motor.*

Look at the construction of a Fairbanks-Morse Motor point by point. Compare the Copperspun Rotor with any other type of rotor. Then ask yourself whether you want windings centrifugally cast of *COPPER* or of some less suitable material.

We believe that you know motor quality when you see it. That's why we ask you to look at the MOTOR. A post card or telephone call will bring you a demonstration. Fairbanks, Morse & Co., Dept. B68, 600 S. Michigan Ave., Chicago. Branches and service stations throughout United States and Canada.

Copperspun
Patented

FAIRBANKS • MORSE  MOTORS

DIESEL ENGINES ELECTRICAL MACHINERY MAGNETOS RAILROAD EQUIPMENT WASHERS-IRONERS
STOKERS PUMPS MOTORS WATER SYSTEMS FARM EQUIPMENT AIR CONDITIONERS

New PRODUCTS • IDEAS

LIGHT WEIGHT POWER TRUCK



■ Many superintendents of industrial plants, unable to use heavy material handling equipment due to weak floor construction, have desired a light-weight, compact, power truck that would lift, carry and tier loads weighing up to one ton; one that could efficiently operate in congested areas, in limited capacity elevators, in transport trucks and freight cars, and up ramps.

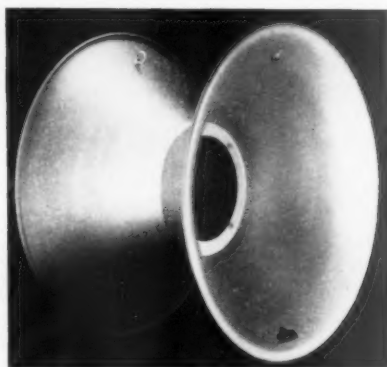
To meet this demand Clark Trutractor Division of Clark Equipment Co., Battle Creek, Mich., has developed a sturdy, low-priced, compact, fork type truck that incorporates all desirable features in modern truck design. These trucks are offered in six models, capacities 1000, 1500, 2000 lbs. with standard finger lifting heights of 60 to 108 inches, other special heights optional.

Gas-powered for 24-hr. continuous service, an important factor in any industry subject to "peak" seasons, it has an economical, four-cylinder, industrial truck engine, front wheel drive, rear wheel steer, hydraulic lift and tilt. Self starter and hydraulic brakes are standard equipment. The driver rides on a comfortable spring suspended seat with all controls within easy reach, thus permitting safe operation at speeds from one to seven miles per hour forward or reverse.

Assisting in the receiving of raw materials and parts, speeding them through

processing, tiering, bales, crates, cases and cartons ceiling high in storage, later retrieving them and loading transport trucks or freight cars—these are a few of the many ways these dwarf-size trucks cut handling costs and increase the efficiency of the modern factory.

SPEAKER FOR PAGING SYSTEMS

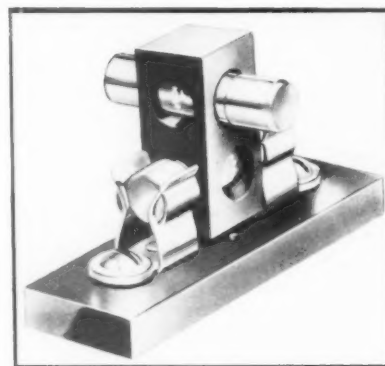


■ Two-Way loud speaker baffle, offering two-directional sound projection from a single 8" cone speaker, is especially designed for industrial call systems and paging systems. This practical speaker projector tends to reduce the number of speakers required in an installation, offers more uniform sound distribution, and eliminates "blasts" at speaker mounting points.

The effect of two individual speakers is achieved inasmuch as the sound wave originating from the rear cone is utilized in the same manner as the sound wave from the front cone surface. The speaker, 8" size, is mounted between a pair of separate flared bell sections. These bell sections are constructed of heavy gauge pressed steel, finished in brilliant aluminum lacquer, with bell diameters measuring 21½" across. When joined, the two sections have an overall length of 14". Suspension loops are provided for hanging from the ceiling. Hardware is supplied for mounting the 8" cone speaker unit.

Product of the Atlas Sound Corp., Brooklyn, N. Y.

QUICK FUSE-CHANGING



■ An entirely new convenience for changing fuses in close quarters—replacing a blown fuse in a twinkling—and giving notice on inspection that another spare is required, are features compactly embodied in a spare fuse holder and puller combined, announced by Littelfuse, Inc., Chicago, Ill.

These devices are applicable to all 4 AG and 5 AG fuses. The fuse in circuit goes through one end of the soft rubber rectangular holder, between the clips. Above, and at right angle, is an opening in the holder for the spare fuse. When inserted, the caps of the spare fuse project beyond the holder affording an easy grip for two fingers.

When the fuse in circuit blows, all the operator has to do is to pull and reverse the holder. This puts the spare fuse in circuit and brings the blown fuse on top in the same position that the spare was in before. The change is easily made in a moment.

One end is painted red. Until a fuse change is necessary, the red end is underneath, out of sight. When a reverse is made, putting the spare fuse in circuit, the red end is brought into full view on top. To an inspector or service man this red signal instantly indicates that a fuse has blown and that another spare is required. If the end is black both the fuse in circuit and the spare are still serviceable. Fuses are easily removed and replaced.

THE DANGER LIES AT THE
TURN

Accidents lurk when power and speed crowd **PIPING TURNS** too!

In 6-day bicycle races,
if riders come to grief—
it's usually on the turns
where speed and strain
increase the danger.
(I.N.S. photo)

Weld piping with **TUBE-TURN** fittings to prevent trouble at the crucial spots!

It takes strength and stamina to withstand the grueling pressure of a 6-day bike race, but that's nothing to the strain and stress imposed on many piping lines. The greatest concentration of pressure in pipe lines is placed on the turns—wherever there is a change of flow direction. Tube-Turn fittings are engineered for added protection where the danger lies—wherever elbows, returns, tees, reducers, laterals, nipples and flanges are used. You will find a type, size and weight of Tube-Turn fitting for every pipe welding need. Look for the Tube-Turn insignia welded on each fitting.

Write for Tube-Turn engineering data book and catalog.

TUBE-TURNS

INCORPORATED
LOUISVILLE, KY.

Branch offices: New York, Philadelphia, Chicago, Pittsburgh, Cleveland, Tulsa,
Los Angeles. Distributors everywhere.

TUBE-TURN *Welding Fittings*

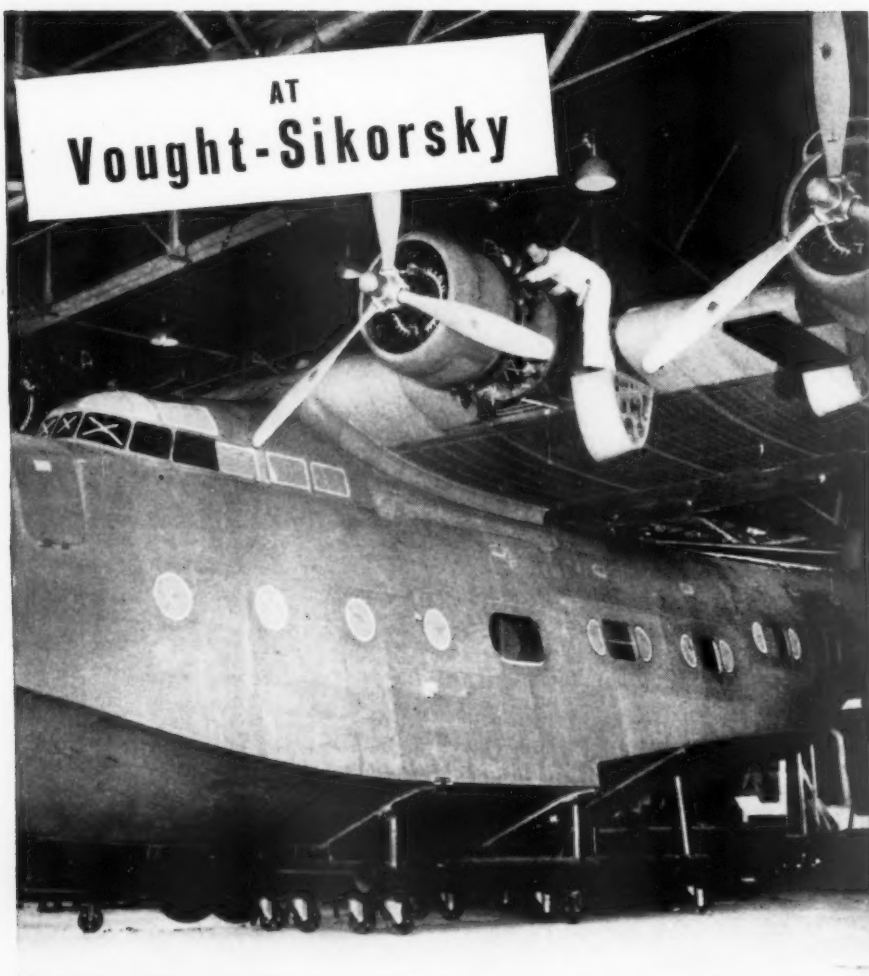
TRADE-MARK



HOW TUBE-TURN FITTINGS PROTECT WHERE FLOW DIRECTIONS CHANGE



This compact piping installation illustrates four common points that occasion changes in flow direction—a welding tee at the top, then a 90° elbow, a reducing outlet welding tee at the right, and a concentric reducer near the bottom. Tube-Turn welding fittings are used here to guard against danger at these turns.

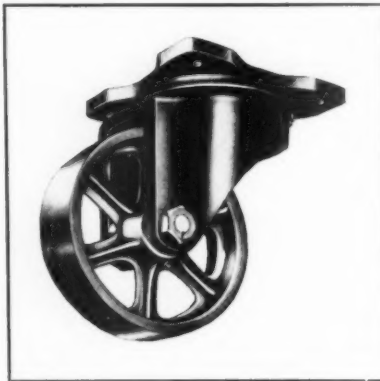


First of a fleet of giant four-engined flying ships being built by Vought-Sikorsky Aircraft. Note how ship rolls on Bassick Casters.

FULL SPEED AHEAD ON BASSICKS

Speed—Speed—Speed...on Bassicks! Wherever you turn in our mighty wartime speed-up you'll find these little wheels of industry doing their bit—rolling out goods and guns on their sure way to Victory.

Whether you make shells or foods, motors or metals, if it's *vital*—get it going on Bassicks! Swiftly! Smoothly! Quietly! In warehouse, factory, mill and office—Bassick Casters speed your product on its way!



KEEP 'EM ROLLING ON BASSICKS

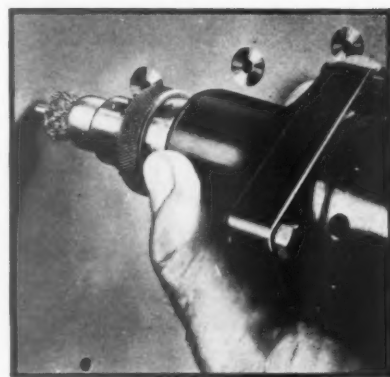
BASSICK CASTERS

THE BASSICK COMPANY • BRIDGEPORT, CONN.

WORLD'S LARGEST MANUFACTURER OF CASTERS

When writing The Bassick Company please mention Purchasing

TINY BRUSH SPEEDS PRODUCTION



■ A tiny brush, no bigger than a finger, designed particularly for the aircraft industry but applicable to many other industries, has been developed by the Osborn Manufacturing Company, Cleveland, Ohio. The little tool, used to clean a small area from around rivet holes, bolt holes, etc., has speeded up such work and makes it possible for one man to do the work previously requiring seven.

All internal and external metal parts of a plane are coated with zinc chromate paint. Where a good metal-to-metal bond is required to eliminate hazard of fire or radio interference, due to static discharge, zinc chromate paint must be removed from around rivet and bolt holes.

When it is realized that there are approximately 1,000,000 rivets and numerous bolted connections in a \$50,000 military plane, many of which require a metal-to-metal bond, it isn't surprising that entire crews of men, using make-shift methods, were required to work 24 hours a day preparing surfaces.

An Osborn brushing analysis led to development of this brush. It is a tiny end-brush made of wire and incorporates a special pilot rod to fit into the hole. Tests prove that the brush does not clog, that it does the work better and that it speeds up the operation 700%, releasing vitally needed aircraft workers for other jobs.

In addition to its great importance to the aircraft industry, the brush has many applications in other industrial fields.

RUST PREVENTATIVE

■ A product which prevents rust and provides clear water from any metal tanks or pipes and from lead, brass, or black, galvanized or cast iron water systems, has been announced by the Sudbury Laboratory, South Sudbury, Mass. It also clears out loose rust from old, rusty tanks and pipes.

By the use of "Aqua-Clear," even the cheapest metal water systems are made permanent so far as internal rust or corrosion are concerned. Thus it preserves present water systems at a time

Message to Garcia 1942 Style

In '98, Rowan struggled in the jungles of Cuba three weeks to deliver his message to Garcia. Today, there is hardly a military commander in any American outpost--from Iceland to the Philippines--who can't be reached in an hour or less from Washington, by plane or telephone or short-wave radio.

In this revolution in communication, steel has had a vital part. Steel not only goes into the delicate instruments of the Signal Corps, but also plays essential roles in the form of conduit, copperclad

steel wire, aerial towers, and other equipment of many kinds.

For many months, a sizable percentage of Youngstown's production has been going into materials for defense use, including the Signal Corps -- conduit, pipe, wire, rods, bars, shapes, sheets, strip and plate. As we help to speed messages by the hundreds of thousands to our modern Garcias, we are insuring that tomorrow

America may enjoy the peacetime products of our mills and factories.



Youngstown products include Pipe and Tubular Products - Sheets - Plates - Conduit - Bars - Tin Plate - Rods - Wire - Nails - Tie Plates and Spikes 25-28D



**THE
YOUNGSTOWN
SHEET AND TUBE COMPANY**

Manufacturers of Carbon, Alloy and Yaloy Steels
General Offices - YOUNGSTOWN, OHIO

When writing The Youngstown Sheet and Tube Company please mention Purchasing



**Purchasing
EXECUTIVES . . .**

—of successful manufacturing companies—whose responsibility it is to buy wisely—usually decide on "Briggs & Stratton" when gasoline motors are needed.

Men who make buying their job pay exacting attention to quality, dependability, and value, carefully check the integrity and standing of their suppliers.

And that is why purchasing executives usually prefer to buy 4-cycle, air-cooled gasoline motors for their powered equipment from Briggs & Stratton — the world's largest producers—sizes, 2/3 to 6 HP.

BRIGGS & STRATTON CORP., Milwaukee, Wis., U.S.A.

4 CYCLE

BRIGGS & STRATTON

GASOLINE MOTORS

These Machines Are Representative Examples of the Wide Variety of Applications of Briggs & Stratton Motors.

ROAD MARKER

BATTERY CHARGER

SICKLE BAR MOWER

when replacement is difficult and, in new work, permits the satisfactory use of more readily available metals in place of those that are severely restricted for civilian use.

The product is a clear, tasteless harmless liquid which is added in minute quantities to the water as it is put into the system. In many cases, it is convenient to add it manually. In others, a proportioning device may be used.

The amount required to prevent rust is one ounce to each 100 gallons of water. Somewhat larger quantities are required for the removal of old loose rust.

Rust formation is prevented by the deposit of a thin, non-permanent film on metal surfaces. This film is so thin that it does not interfere with the flow of water, even in narrow pipes, and it cannot build up to form a scale. It can be maintained, however, by adding "Aqua-Clear" in the original proportions as water is put into the system.

It is valuable not only for providing clear water and protecting new tanks from rust, but also for stopping further deterioration of old tanks and thus postponing replacement almost indefinitely.

AUTOMATIC TYPEWRITER

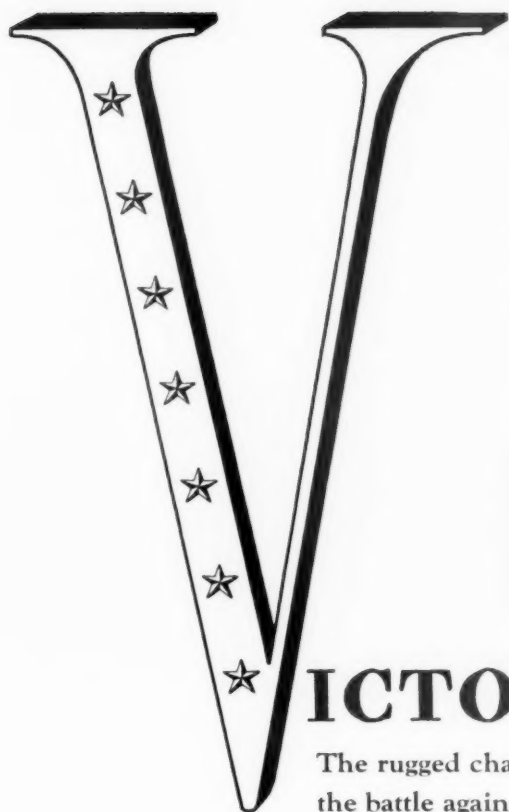


■ An automatic typewriter employing push buttons for selection of form letters, special paragraphs in form letters, and for detailed order-writing and billing operations, has been announced by American Automatic Typewriter Company, Chicago, Ill. The machine has two banks of push buttons, one for each of two rolls from which letters or billing entries are transcribed, with 40 stations on each bank.

The machine is actuated by two perforated paper rolls similar to music rolls. The push buttons select desired information from either roll. Rolls are easily changed, making the machine readily available for work above its two-roll operating capacity.

The push-button control facilitates operation of the machine in all letter writing applications, and extends use of the auto-typist principle to order writing and billing where a certain portion of the work is repetitive. In its operation, a customer's name, address, shipping instructions, terms and repetitive instructions can be typed automatically.

When writing Briggs & Stratton Corp. please mention Purchasing



ICTORY PRODUCTION

The rugged character of  and  VALVES that you found to be a factor in the battle against high production costs now fights for you on the war front.

We are putting all we've got into the job and believe that a sincere all-out effort is the sure way to bring closer the day of Victory.

So it has become even more important that Reading-Pratt & Cady developed valves that will stand the drive of a 7-day production with minimum maintenance—and designed these valves with renewable features so that they can be continued in service at peak efficiency with the use of only minimum quantities of scarce and essential metals.

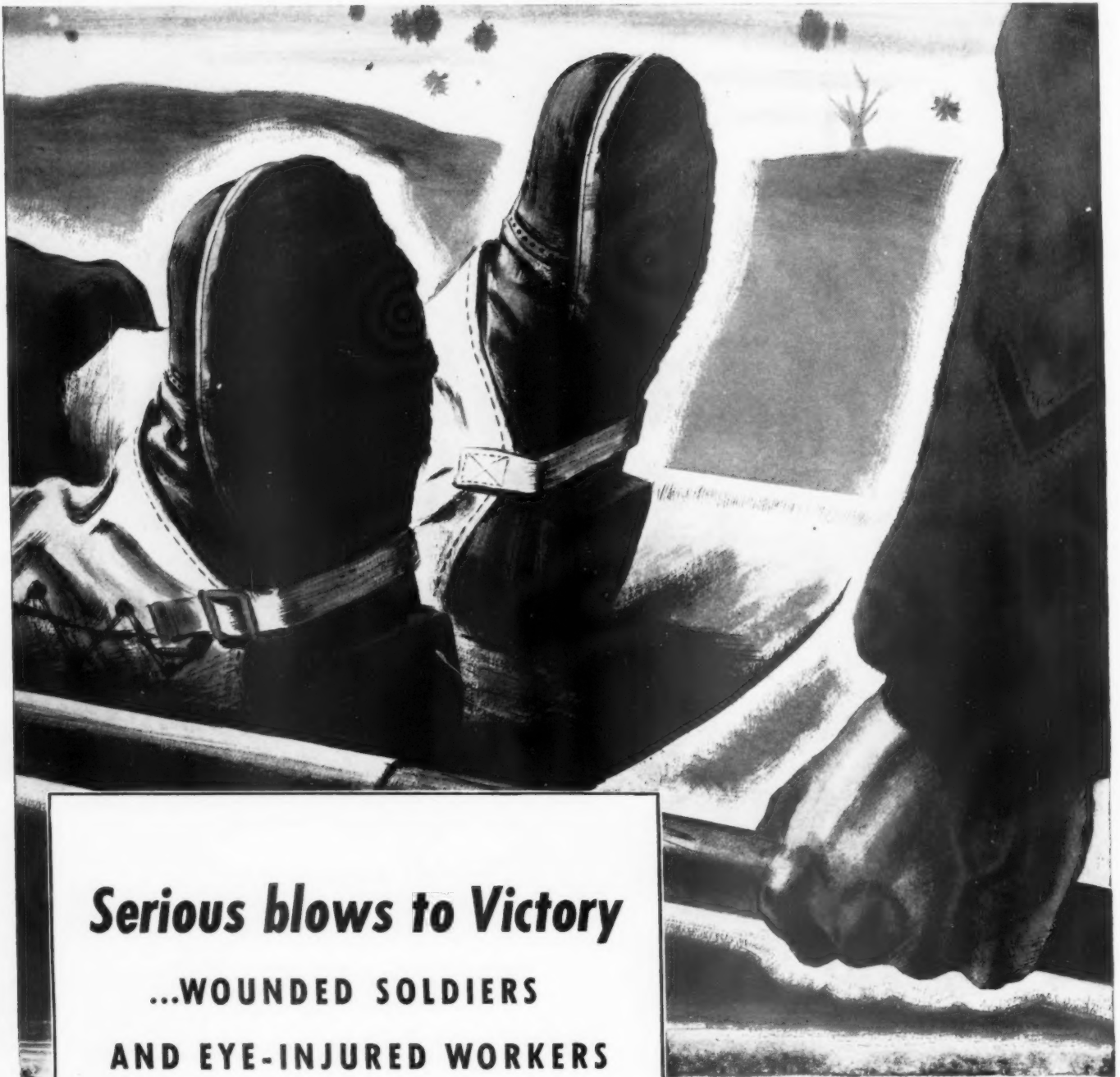
Reading Cast Steel Valves & Fittings, Pratt & Cady Brass & Iron Valves, D'Este Valve & Engineering Specialties

READING-PRATT & CADY
READING, PENNSYLVANIA



A Division of AMERICAN CHAIN & CABLE COMPANY, INC. Bridgeport, Conn.

When writing Reading-Pratt & Cady please mention Purchasing



Serious blows to Victory

...WOUNDED SOLDIERS

AND EYE-INJURED WORKERS

INDUSTRIAL eye-casualties that take workers—even temporarily—from the battle for the production of war materials, can hurt the cause of Victory as much—or *even more*—than the loss of a soldier or sailor. In 1940 and 1941, nearly 20,000,000 man-hours needed to turn out munitions, ships, tanks and planes were lost by *industrial eye accidents* alone.

Those lost man-hours were lost *forever*. A most terrible tragedy and waste. But the point right now is this: *eye accidents must not happen from now on*. **GOGGLES MUST BE WORN.** American Optical Company is working day and night to

make available to plants throughout the country its line of light, comfortable, safe goggles . . . goggles equipped with Deep-Curved Super Armorplate Lenses for greater resistance to impact.

An American Safety Representative is located in an AO Branch Office near you. Please don't wait . . . call him in for his recommendations today.

American Optical Company

 **Factories Located at Southbridge, Mass.**

MANUFACTURERS, FOR MORE THAN 100 YEARS, OF PRODUCTS TO AID AND PROTECT VISION

When writing American Optical Company please mention Purchasing

while non-repetitive items are filled in manually. On production orders, the machine will automatically type special instructions that accompany a customer's orders, as well as descriptions of items, while on purchase orders it may be used to automatically type the supplier's name, address and a description of the items obtained from the supplier.

Any make of billing typewriter, manual or electric, can be attached for conversion into an automatic order-writing or billing machine. Any type of continuous forms or one-time carbons may be used.

Each roll, or stencil, accommodates 200 lines of type which may be divided into complete letters, or paragraphs or groups of paragraphs, or into single- or multiple-line billing entries. Any portion of the material may be automatically selected by pushing the corresponding buttons. Letters or entries in billing operations may be composed from any possible combination of the 80 selections afforded on the two rolls. Fill-ins, whether they be dates, names or dictated paragraphs in the case of form letters, or non-repetitive items in billing operations, can be inserted anywhere. The machine stops automatically where fill-ins are to be inserted, and automatically makes adjustment for the length of the fill-in.

EASTERN COOLANT PUMPS



■ To aid the machine industry in filling National Defense orders, The Eastern Engineering Co., New Haven, Conn., announces the addition of a complete new series of coolant pumps to its present line.

It features: open impeller which allows small chips or grit to pass through the pump without harming or effecting it in any way; no stuffing box to leak, consume power or require adjustment; compact design enables installation in small space; and requires no priming.

It is designed for use on lathes, shapers, milling, drilling, and grinding machines, where a steady stream of coolant or cutting oil is necessary. Also suitable for circulating non-viscous liquids for cooling and circulating applications.

The pump is constructed of cast iron and so designed that there is no metal

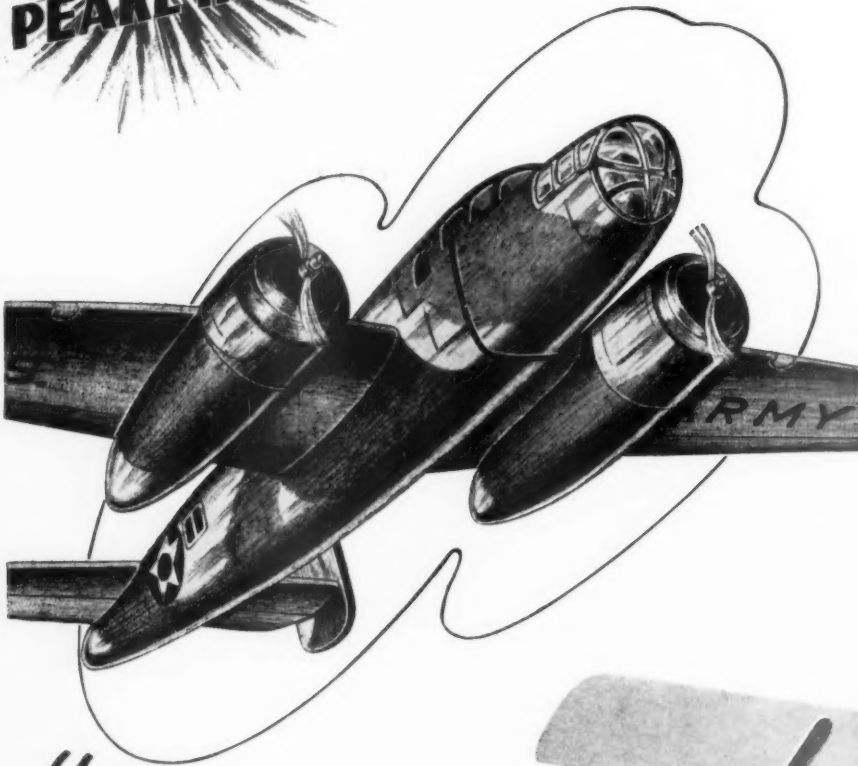
OLIVER

WHEEL BOLTS have earned their chevrons!



When writing Oliver Iron and Steel Corporation please mention Purchasing

**Remember
PEARL HARBOR**



"Keep 'em Flying!"

LUNKENHEIMER VALVES

Are Helping to Build Bombers

ESTABLISHED 1862
THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U.S.A.
NEW YORK CHICAGO
BOSTON PHILADELPHIA
EXPORT DEPT. 318-922 HUDSON ST., NEW YORK

to metal contact below the liquid level, thus making possible continuous and dependable handling of non-lubricating liquids. The pump inlet, located above the impeller, is tapped for 1 1/4" standard pipe. The outlet is tapped for 1/2" standard pipe. The pump is sealed to the motor base, thus eliminating the possibility of any air being drawn into the liquid. Maximum pressure is 6 lbs. per square inch and maximum capacity is 17 gallons per minute.

PROTECTIVE CONTROL DEVICE



■ **Complete protection** against heat or excessive current, or both, is provided by a protective control device for arc welding machines announced by The Lincoln Electric Company, Cleveland, Ohio.

This development creates advantages not previously available with conventional welder protective devices. A welding machine equipped with this device, which provides protection against burn-out, can be operated at maximum capacity for long periods without harm.

The protective control device (see accompanying illustration), consists of two current transformers (upper devices in illustration), the primaries of which are connected in series with the motor leads and the secondaries supplying power to operate two snap-action thermostats which are mounted directly on the motor lamination (lower device in illustration). These thermostats are connected to the lamination in such a way that they operate by means of heat conduction as well as by current passing through the thermostat.

The protection provided by this device is as follows:

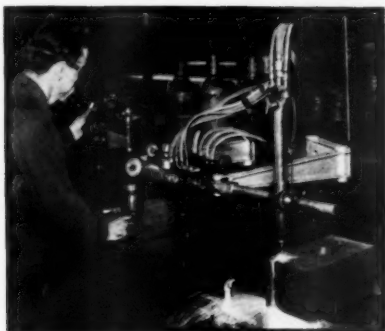
If the welder is being operated in a very hot room or an oven and it exceeds the safe operating temperature, thermostats will trip open; if the motor is cold and excessive currents which will eventually damage the motor occur for a short period of time, the thermostat will operate before the motor reaches an un-

When writing The Lunkenheimer Co. please mention Purchasing

safe temperature; if the machine is started on single phase lines, the switch may close, but the excessive heating of the thermostat caused by the single phase locked current will open the thermostat and stop the machine; if the machine is running and one fuse blows so that the motor is operating single phase, if the load on the machine is sufficient to overheat the motor the thermostats will trip out; if the rotor is locked with normal three-phase power applied, the thermostats will open the circuit due to the high current; if the welder is operated for long periods of time at sustained overloads, both high input current and high motor temperature combine to open the thermostats.

The thermostats automatically reset when the motor returns to a safe operating temperature or when the current is reduced, and no manual operation is required to start the machine, except pushing the start button.

OXYACETYLENE TIP WITH DIVERGENT NOZZLE



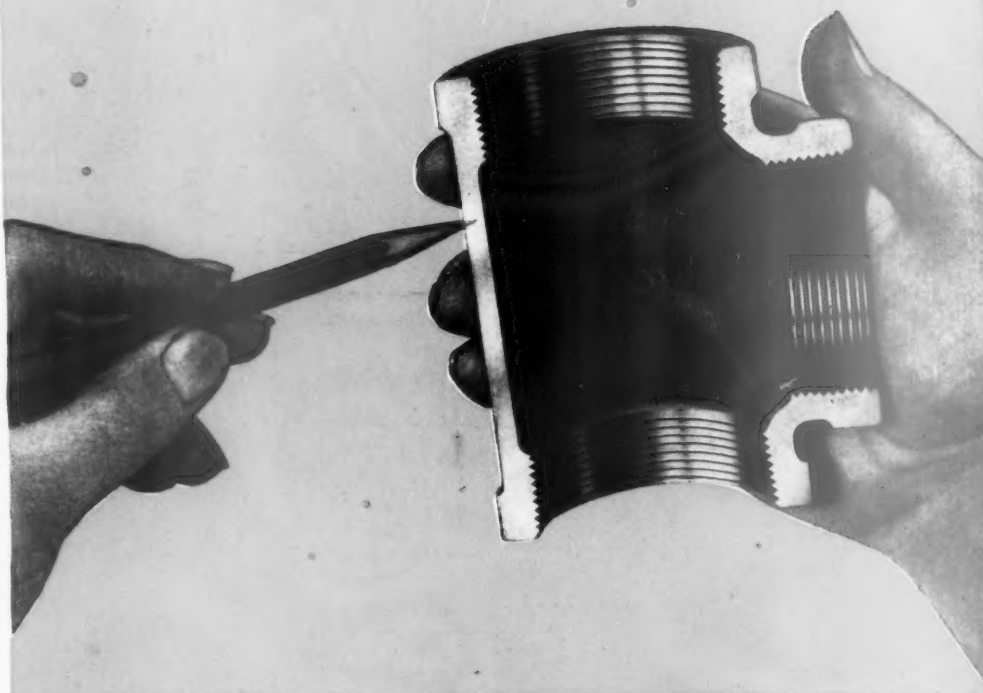
The "45" high speed machine cutting tip with divergent nozzle makes short work of cutting out a semi-circular piece from this 6-inch thick alloy-steel block used in a field gun. There is no room for errors here. This block must be cut to close tolerances in the minimum amount of time. Use of the "45" speeds cutting time 20 to 30 per cent.

■ A series of oxyacetylene machine cutting tips of revolutionary design increase the cutting speed of machine torches by 20 to 30 per cent and assure cuts of a quality comparable to those obtained with standard tips. They represent a particularly important and timely development because of the increased speed in war production that they will make possible. The tips have been developed by Air Reduction, New York, N. Y.

The "45" high speed machine cutting tip has a nozzle with a divergent exit portion—a design that makes it possible to eject a narrow, high velocity stream of oxygen, practically free of exit turbulence, that burns a narrower path or kerf, through the metal, than the conventional cutting tip. As a result of burning away less width of metal in a cut, it cuts with no increase in oxygen consumption.

To obtain a kerf of narrower width than that obtained in standard cutting

Finer-Grained Metal



makes these AIR-FURNACE MALLEABLE FITTINGS **20% STRONGER**

Less breakage during installation . . . extra safety in service . . . lasting protection against maintenance troubles . . . that's what you can expect from Grinnell Malleable Fittings, made exclusively from Air-Furnace metal.

A bonus of 20% in strength and uniformity is what you get when you insist on Grinnell Air-Furnace Malleable Fittings. They are available everywhere through wholesalers, heating and plumbing contractors and branch offices in all principal cities. Catalog "Grinnell Pipe Fittings" shows the complete line. Write for one. Grinnell Co., Inc., Executive Offices, Providence, R. I. Branch offices in principal cities.

OTHER PLUS FEATURES OF GRINNELL FITTINGS

Controlled Annealing
Tested Strength
Smooth Cores
Uniform Wall Thickness
Precision Threads
Accurate Chamfer

CAST IRON
AIR-FURNACE MALLEABLE IRON
STEEL . . . BRONZE
PIPE FITTINGS
By

GRINNELL
WHENEVER PIPING IS INVOLVED

make **V** shipments

"BOUND TO GET THERE"

When production is completed, be sure that *your* "V" products are "Bound to Get There" . . . with Acme Steelstrap (for reinforcing all types of shipping packs) and Acme Unit-Load (for bracing carload freight) . . . so as to reach destination as rapidly and safely as possible. A careful check-up of your packing and shipping reinforcing methods may disclose ways to save man-hours and materials—may help assure faster delivery. Don't take chances on a "slow down" at this vital point, at this critical time . . . have the check-up made now.

AIRCRAFT in huge boxes travel safely when braced to flat cars with Acme Unit-Load Bands.

BLANKETS for the army are packed and handled quickly and easily in Acme Steelstrapped cantons.

OIL producers make their products "Bound to Get There."

OVERSEAS shipments of medical supplies arrive in good condition . . . when Acme Steelstrap is used.

SHELLS for the Navy travel safely—are unloaded faster when braced with Acme Unit-Load Bands.

Manufacturers of all types of products in every American industry simplify packing, shipping and car-bracing procedures—utilize maximum carloading capacity—assure faster delivery with Acme Steelstrap and Acme Unit-Load Band applied with Acme strapping equipment.

Acme engineers are co-operating with government authorities, carriers and manufacturers to maintain the acceleration of increased production from source to final destination.



ACME STEEL COMPANY

2842 ARCHER AVE., CHICAGO, ILL.

Branches and Sales Offices in Principal Cities

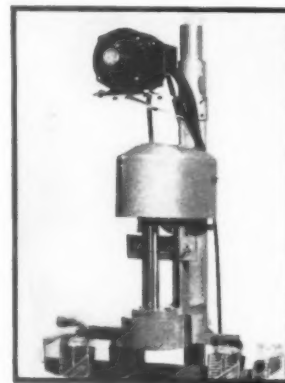
When writing Acme Steel Company please mention Purchasing

practice, it is necessary to use a narrow, parallel-walled oxygen stream. This is obtained when a high operating pressure is used in a divergent tip that reduces the exit turbulence of the oxygen stream.

As the oxygen stream penetrates steel, its velocity is constantly dissipated. The divergent tip principle increases the velocity of the oxygen stream, and provides a higher oxygen concentration at greater depths, thereby increasing the oxidation rate of the metal being cut.

These high-speed machine cutting tips are available in sizes 0, 1, 2, 3, 4, 6, 8 and 10 for cutting metal thicknesses up to 8 inches. The tips fit standard machine cutting torches.

BAG SEALER



■ **Speed, adaptability, versatility and endurance** is claimed for their rotary bag sealer by Pack-Rite Machine Corp., Milwaukee, Wis. It is thermostatically controlled to seal MST cellophane, pliofilm and similar heat-sealing materials.

Its self-adjusting mechanism permits sealing of two or more thicknesses without adjustment. It seals bags individually, or continuously from a production line. It seals as fast as bags can be fed into the machine. Its operation is silent and is adjustable to any angle or height. It operates in either direction, and can plug into any 110 volt a.c. outlet. It is of sturdy steel construction with simple mechanism. It delivers perfect crimp-sealed bags that will dress up your package. It is an air-tight seal for your products, preserving their freshness and goodness.

BELT GRINDER

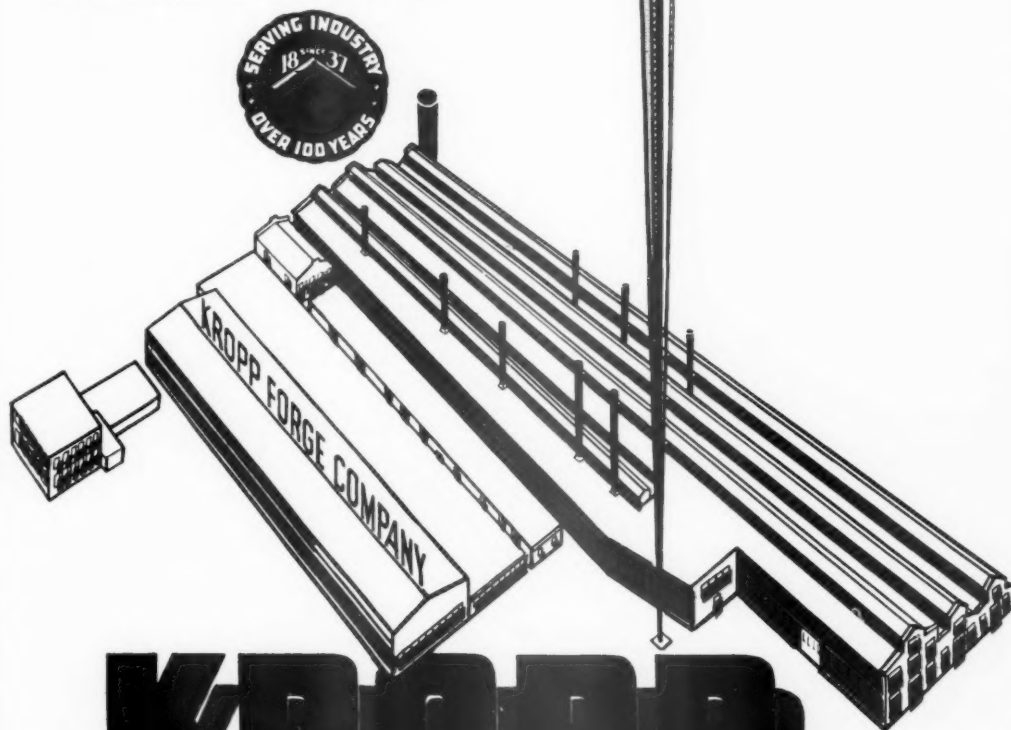
■ **A small abrasive belt sander-grinder** using a belt four inches wide by forty-five inches in circumference has been added to the line of Porter-Cable Machine Co., Syracuse, N. Y. This grinder is so equipped that it may be used either with dry belts or with the new type, resin bonded abrasive belts on which water or other coolant is sprayed. A three-quarter horse power, 1725 r.p.m. ball bearing, totally enclosed motor, directly connected to the drive pulley of grinder, gives a belt speed of 3400 surface feet per minute, travelling over a

KROPP GETS COVETED NAVY FLAG

Awarded by the Navy for excellence—the navy ordnance flag and a large white "E" on a navy blue pennant fly from the flag pole at the Kropp Forge Plant.

Rarely bestowed on suppliers of materials that go into armaments, we are proud of this award for our past years' efforts.

Proud of the small part we have played in the national defense program, proud of this recognition of our effort—the Navy "E" spurs us on to still greater accomplishments. We will constantly increase our output of forgings for the machines of war until a glorious Victory is ours!

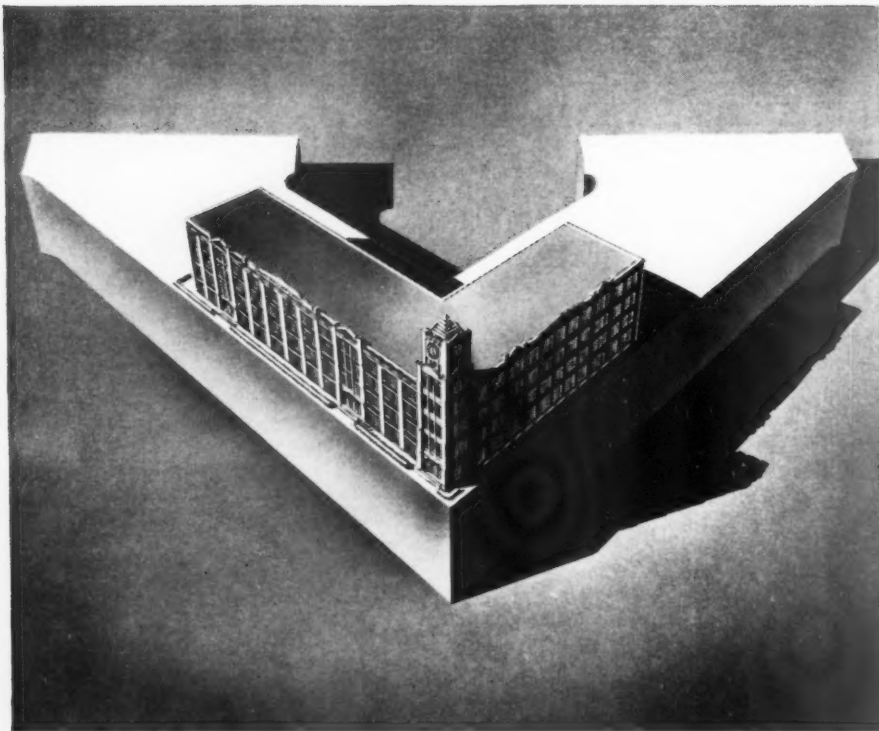


KROPP

KROPP FORGE COMPANY • 5301 West Roosevelt Road Chicago
 "World's Largest Job Forging Shop"
 Makers of Steam Hammer, Drop and Upset Forgings



When writing Kropp Forge Company please mention Purchasing



WORKING FOR **V**ICTORY

Good lamps and quantities of them are essential to the all-out production effort that will win the war.

Under this roof every worker, every engineer and every inspector guarding the quality and dependability of Champion Lamps, is concentrating on the task of turning out the very best lamps using the least amount of critical war materials.

If *our* efforts succeed in contributing to *your* production efforts we shall consider it a job well done. Get in touch with the nearest Champion distributor. See what he can do to meet your present need for good lamps at low cost. We'll gladly send you his name if you haven't it.

★ Pictured above is the home of Champion Lamps—the headquarters of an organization that has devoted its skill, experience and resources since 1900 to the making of electric lamps of unsurpassed quality — licensed under General Electric Co. incandescent and fluorescent lamp patents. ★

CHAMPION LAMP WORKS
Lynn, Massachusetts
 A DIVISION OF CONSOLIDATED ELECTRIC LAMP CO.

When writing Champion Lamp Works please mention Purchasing

flat backing plate four inches wide by ten inches long, allowing a working surface of forty square inches. Two convenient hand adjustments simplify the application, removal and alignment of abrasive belts. A removable side guard exposes the entire interior. The cast iron pedestal on which the complete unit is mounted is substantial yet light enough to make the machine readily portable. A position change from vertical to horizontal, or even horizontal with the belt underneath can be quickly made by removing three bolts. The slotted rest table is adjustable up to a forty-five degree angle.

It is recommended for sanding or grinding small parts composed of wood, metals, plastics, glass, fibre, hard rubber, ceramics and other materials where a clean, uniform surface is desired, pieces to be squared or radii to be generated. It will also handle many light milling and grinding operations without the use of fixtures, thus saving lock up and tool travel time over voids in scattered areas.

COMFORT-BRIDGE SPECTACLE-TYPE GOGGLE



■ **Something radically new** in the direction of making spectacle-type goggles easier and more comfortable to wear, is claimed for the new "comfort-bridge" feature announced by the Chicago Eye Shield Company, Chicago, Ill.

The bridge is described as a single unit, molded out of non-flammable plastic material including wide bearing jumbo pads which distribute the weight evenly and float the frame without undue pressure across the bridge of the wearer's nose. Designed for flexibility, both the bridge and pads become self-adjusting to varying nose widths.

The frame is of light weight design, yet retains every element of strength. The arch bridge is high and engages the eye wires at four different points by means of forked ends, thereby gaining double the strength and rigidity obtained when only two points are engaged. This construction is said to entirely eliminate readjustment and to minimize breakage at these vital points.

They are offered in three bridge widths, narrow, medium and wide, and are furnished with 50 mm. lenses or the newer drop oval shapes, in Cescor Hardened lenses which meet all government specifications. Transparent side shields and leather padded side shields are also available.

WANTED:



one gypsy
on our payroll !

Maybe a crystal ball would help. Anyway, we'd sure like to know how you're going to use that steel you order. The answer might save *you* a peck of trouble!

A small detail, for instance, would have saved hours of vexation for a P. A. recently. Hunting 300 pounds of *cold drawn* .45 carbon bars, he found his high priority useless—there wasn't a pound in town. Meanwhile, a complete stock of *ground bars*—same analysis, entirely satisfactory for the job—snugly nestled in a Frasse warehouse just nine blocks away!

To get steel faster, to save *yourself* time and energy—don't depend on fortune telling. Give details when you need steel. Tell how it is being used, and for what purpose. Chances are you'll lose less time playing detective.

And talking about saving trouble—when you want competent technical advice on steel, why not use Frasse Technical Service, *Peter A. Frasse and Co., Inc.*, 17 Grand Street, N. Y. C. (Walker 5-2200). 3921 Wissabickon Avenue, Philadelphia (Radcliff 7100—Park 5541). 50 Exchange Street, Buffalo (Washington 2000). Jersey City, Hartford, Rochester, Syracuse, Baltimore.



Frasse Mechanical Steels

SEAMLESS STEEL TUBING • COLD FINISHED BARS
STAINLESS STEELS • SAE ALLOY STEELS • DRILL ROD
COLD ROLLED STRIP AND SHEETS • WELDED STEEL TUBING

When writing Peter A. Frasse and Co., Inc. please mention Purchasing

We've Helped Others to Save Defense Materials For Many Years!

A war of resources and resourcefulness breaks out and a nation becomes conservation conscious. We've got to save vital materials so we can use them where they'll do the most good.

Amsco has been conservation conscious for over 30 years. We've preached it in the market place. We've demonstrated time and again that by using Amsco 13% Manganese Steel Cast parts where impact and abrasion are involved, fast wear and costly replacements resulting from misapplication of ordinary steel are eliminated.

All Amsco products serve to reduce the consumption of vital metals by minimizing replacements—thus saving man-power as well.

You can help yourself and help the defense effort by applying Amsco Manganese Steel wearing parts to equipment that is subjected to heavy impact and abrasion. Amsco engineers and metallurgists will assist in adapting Manganese Steel to your particular needs.

Amsco
AMERICAN MANGANESE STEEL DIVISION
OF THE AMERICAN BRASS SHOE & FOUNDRY CO.
Chicago Heights, Illinois

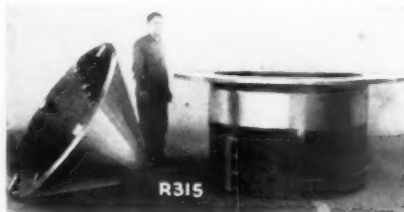
FOUNDRIES AT CHICAGO HEIGHTS, ILL.; NEW CASTLE, DEL.; DENVER, COLO.; OAKLAND, CALIF.;
LOS ANGELES, CALIF.; ST. LOUIS, MO. OFFICES IN PRINCIPAL CITIES

Amsco Manganese Steel Aids Defense by Conserving Steel in Coal Mining



Manganese Steel work-hardens, withstands shock stresses, outlasts other metals used for power shovel dippers. Amsco builds dippers and makes parts for all shovels—for construction, tunneling, mining, dredging.

Blast Furnaces and Steel Mills



The men who know steel best use Manganese Steel for equipment parts exposed to shocks and abrasion.

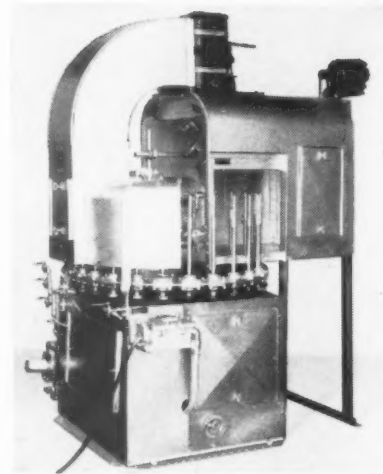
For All Industry



Manganese Steel Sheaves represent many applications in factory, field and mine that save time and money and help to maintain continuous production.

Manganese Steel Castings for shocks and abrasion.
Chromium-Nickel Alloy Castings for heat and corrosion resistance.
Power Shovel Dipper, Dredge and Industrial Pumps.
Welding Materials for reclamation and hard-surfacing.

SMALL SHELL SPRAYER



■ An automatic spray machine to coat and dry the outside of small shells (20-40 mm.), grenades, shot, or boosters, has been built by the Eclipse Air Brush Co., Newark, N. J.

The machine consists of an automatic turntable on which the pieces are carried on indexed spindles to a position in front of automatic spray guns in a booth equipped with exhaust fan. After being coated, the pieces go through a small oven opposite the spray booth. A unit heater with blower fan insures rapid drying so that the pieces can be removed manually as they emerge from the oven.

The whole unit is very compact, taking a floor space of only 4' x 4', and working parts are enclosed wherever possible to keep down maintenance costs.

WATTHOUR AND THERMAL DEMAND METER

■ Especially developed to meet the continued extension of demand rates to smaller loads, a low cost combination watthour and thermal demand meter—available for the first time in standard house size, case and mounting—is announced by Westinghouse Electric and Manufacturing Company.

With a.c. ratings of 5, 15, and 50 ampere capacities, 120 to 240 volts, 2 and 3 wire for reading up to 20 kilowatts, the unit is similar to the ordinary watthour meter in general appearance.

In eliminating the self-contained transformer used in previous thermal meters, the voltage component of the thermal element is fed by a secondary coil wound directly over the potential coil of the watthour meter. This arrangement makes it possible to combine the watthour and thermal demand mechanisms into a single unit. An improved design of the thermal unit greatly reduces the required operating energy.

Dial and nameplate are combined with the demand scale located at the bottom of the dial. Two demand pointers are

When writing American Manganese Steel Division please mention Purchasing

ACTION

WHEEL COMPANY GRINDING WHEELS

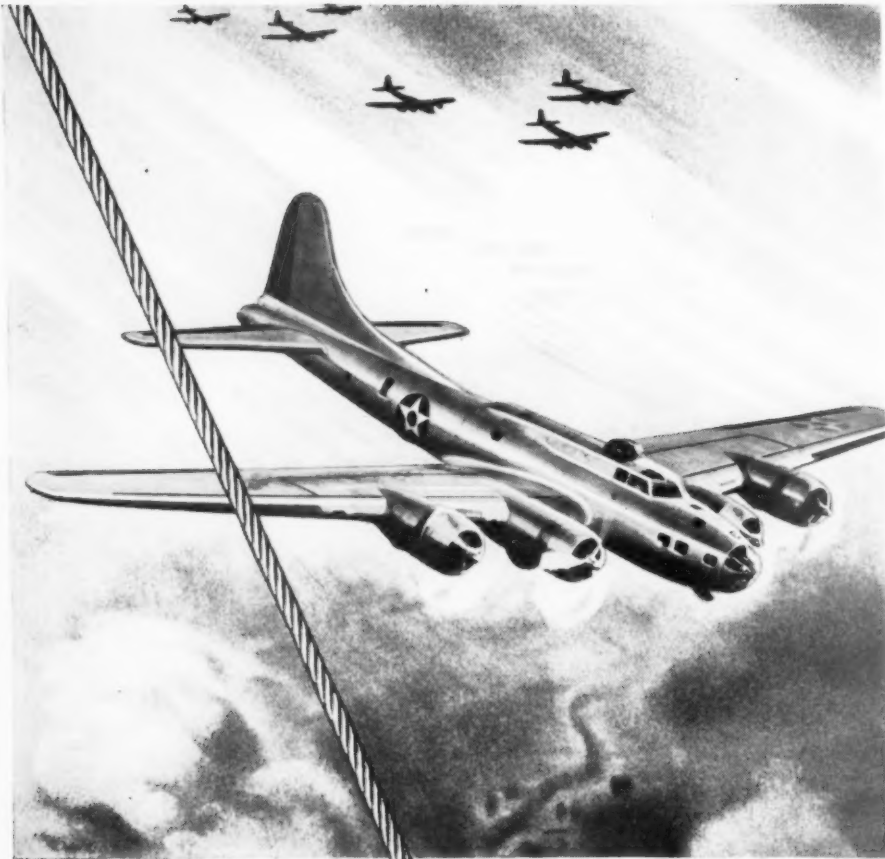
...to meet the heavy production. Their...
...they will be a great relief...
...to the... of the...
...the... can be...
...the... will be...
...the... of the...
...the... of the...

ABRASIVE COMPANY

...the... of the...
...the... of the...
...the... of the...
...the... of the...
...the... of the...
...the... of the...
...the... of the...



When writing Abrasive Company please mention Purchasing



"Korōdless" Aircraft Controls – Steel Nerves for Our Pilots

✪ *The planes are coming by tens of thousands, with millions of horsepower, in the President's two-year program, destined to sweep the skies of enemy opposition.*

The brains of these machines are fearless, fighting pilots. Their steel nerves are American Chain & Cable Aircraft Control Cables which instantly carry the battler's impulse to rudders, ailerons and elevators—to engines, guns, turrets and bomb releases.

Pilots know that with "Korōdless" Aircraft Controls combat instinct is action. They know that Preformed Wire Rope construction gives them the speedy plane response for the knockout blow.

"Korōdless" (Stainless Steel) and Tinned Aircraft Controls and Tru-Loc Fittings are manufactured by the American Chain & Cable Company, Inc., and are among the 137 essential products we build for Industry, Agriculture and Transportation.



AMERICAN CHAIN & CABLE COMPANY, INC. • BRIDGEPORT, CONNECTICUT

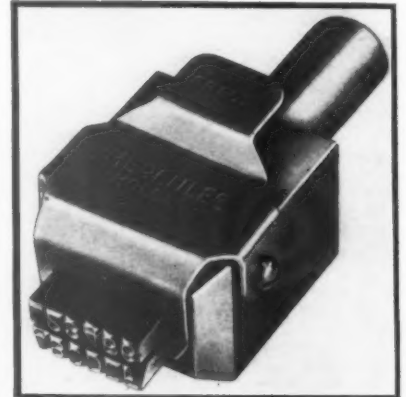
American Chain, American Cable Wire Rope and Aircraft Controls, Campbell Cutting Machines, Ford Chain Blocks, Hazard Wire Rope, Manley Garage Equipment, Owen Springs, Page Fence and Welding Wire, Reading Castings, Reading-Pratt & Cady Valves, Wright Hoists and Cranes

When writing American Chain & Cable Company please mention Purchasing

provided; one operating as a pusher, and the other to indicate the maximum demand. The latter is accurately balanced and held in position by an adjustable friction device to eliminate shifting due to vibration.

The watt-hour mechanism has standard adjustments for full load, light load, and power factor; the thermal unit has only two adjustments for zero and for full scale.

TWO-LINE HOLDER



■ **Makers of a variety** of defense parts often have to number in two lines and the new Hercules two-line holder is the answer where economy is considered. The top line may carry numbers, letters or symbols and the bottom line may carry the number. Both lines are quickly interchangeable by simple thumb pressure on the holding clip.

Both lines use the same style of standard holder type (heavy duty shoulder style) and extra pieces of type permit quick changing to any desired number.

This holder is heavily built of shock resisting heat-treated tool steel and the shank may be of suitable size to fit your punch press.

One holder with an assortment of type takes the place of individual steel stamps and the quick changing of characters makes it much faster to use than individual stamps. They are also furnished in single line and curved line styles.

Product of The Acromark Corp., Elizabeth, N. J.

BLACKOUT SHADES

■ **The sudden** advent of war has brought about an immediate need for methods of blacking out industrial plants which will be working nights on our expanded production program.

The need is for a "blackout" material that will permit the factory to retain the advantage of daylight through large areas of glass. These areas allow use of natural daylight for factory lighting and the use of window ventilators for proper working air.

Buildings having large areas of windows have the advantage of low initial and maintenance cost. Results of bomb-

WALL CHART

A GUIDE TO DEFENSE PRIORITIES, ALLOCATIONS AND PRICES

Stumped on Priorities?

Perhaps your Mill Supply Distributor can help you!

Today he carries approximately 12,000 to 20,000 items in stock. He buys a great part of them on priorities and naturally is compelled by law to sell them to customers who can produce priorities of their own.

Do you know how to obtain desperately-needed materials—even machine equipment—if you wish to bid a Defense sub-contract or to build up your own repair or emergency inventories? Your Mill Supply Distributor can

This incident is typical of the unusual services that many Mill Supply Distributors are rendering their customers during the Emergency.

doubtless help you to obtain and correctly fill out the necessary documents. Telephone him now!

Whether furnishing priorities or physical materials, your Distributor is at your call with service on the spot. The quick, helpful contact that he usually can supply is what *you* want when you buy—it's what *we* want in getting Cle-Forge High-Speed Drills and Peerless High-Speed Reamers across the map to you.

We long ago selected the country's leading Mill Supply Companies as exclusive Distributors for these and other Cleveland products.

We favor adequate Preparedness for National Defense

The CLEVELAND TWIST DRILL COMPANY
 1242 EAST 49th STREET
 CLEVELAND

TRADE MARK REG. U. S. PAT. OFF. AND FOREIGN COUNTRIES

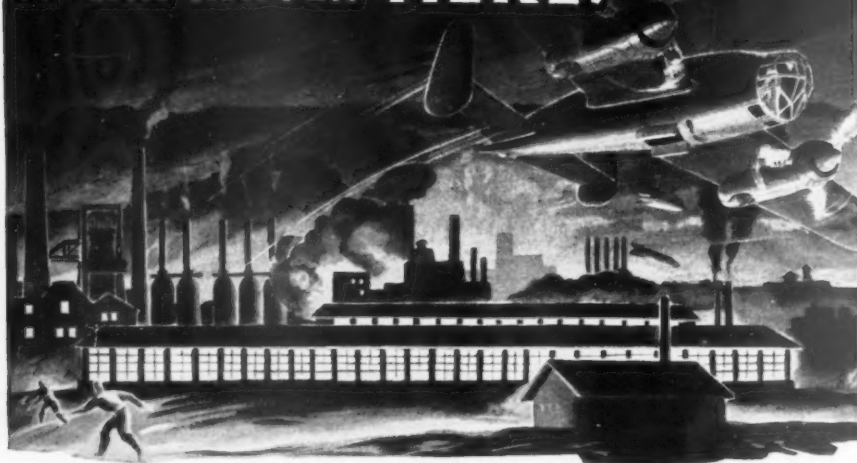
30 READE ST. NEW YORK 9 NORTH JEFFERSON ST. CHICAGO 650 HOWARD ST. SAN FRANCISCO
 6515 SECOND BLVD. DETROIT LONDON - E. P. BARRUS, LTD. - 35-36-37 UPPER THAMES ST. E.C.4



"CLEVELAND" DISTRIBUTORS EVERYWHERE ARE READY TO SERVE YOU

When writing The Cleveland Twist Drill Company please mention Purchasing

IT CAN HAPPEN HERE!



Be Prepared for Air Raids WITH **Carey** BLACKOUT PRODUCTS

**These Scientifically Developed Products
Provide Maximum Protection to
Property and Personnel**

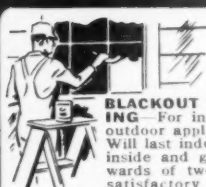
A blackout, to be fully effective, must guard against two definite conditions—prevent reflection of outside light—provide protection against flying glass. Carey Blackout Products ideally meet both of these requirements.

Civilian Defense Bulletin says: "A factory may be well blacked out, but its glass windows may reflect the light of moon, stars, fires or flares." The practical answer to this problem is to apply Carey Blackout Coating to outside surfaces of all skylights. This coating is non-reflective and insures complete light stoppage with one coat.

Civilian Defense Bulletin says further: "More injuries from flying glass are to be expected than from bombs or bomb fragments." Guard against this danger by applying any one of the three types of Carey Blackout Board to the inside of windows. Boards are rigid; cut to size; easily installed—quickly removable.

Carey Blackout Products are economical and effective because they are specifically designed for blackout use. Proved right by tests. Write today for prices and details. Address Dept. 68.

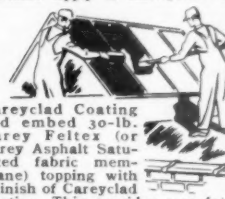
THE PHILIP CAREY MFG. CO.
Dependable Products Since 1873
LOCKLAND, CINCINNATI, OHIO
IN CANADA: THE PHILIP CAREY COMPANY, LTD.
Office and Factory: LENNOXVILLE, P. Q.



BLACKOUT COATING—For indoor or outdoor application. Will last indefinitely inside and give upwards of two years satisfactory service outside. Inexpensive; easily applied with large brush, or may be sprayed on; quick drying. Covering capacity 350-400 sq. ft. per gallon. Easily washed off with naphtha, benzol or other solvents.

BLACKOUT BOARDS—Laminated asphaltic boards of good rigidity for removable panel installation. Moisture and condensation proof. Boards are easily cut to shape and size.

ALL-PURPOSE TREATMENT—Where a more permanent, weather proof, or exterior treatment is desired, use the Carey Laminated System. Apply a thick film of



Careyclad Coating and embed 30-lb. Carey Feltex (or Carey Asphalt Saturated fabric membrane) topping with a finish of Careyclad Coating. This provides complete Blackout and renders the glass shatter-proof.

BLACKOUT PAPER—Always keep several rolls of Carey Blackout Paper on hand for quick, temporary repairs. For best results, use a light weight Carey Smooth



Roll Roofing or the less expensive Carey No. 7 FibreWove, a tough asphalt saturated and coated building paper, weighing only 10 lbs. per 100 sq. ft.

REJUVO SYSTEM OF CAMOUFLAGE—During the past year, we have been working with the U. S. Engineers in developing the Rejuvo System for camouflage purposes and a number of trial installations have been made. This special material and equipment for its application are available through the Carey Branch Office organization.

ings in England show these buildings to be less affected than buildings of solid masonry. A large part of damage from bombings results from concussions and flying fragments. Windows tend to break and relieve air pressure. In case of solid masonry, concussion of an explosion might level the entire wall.

Psychologically, large, clear window areas have a profound effect on most persons. Workers on intricate factory operations can relieve their eyes at intervals by looking into natural daylight and thereby increase their efficiency.

For these large areas of windows, the Hough Shade Corporation of Janesville, Wisconsin, is offering a blackout shade, treated with a fire-resistant material. These shades have roll-up equipment so that they can be rolled up to take advantage of all natural daylight. They also protect workers from sun glare and heat. These shades are finding wide acceptance for "blackout" since they also protect delicate machinery and products from flying glass and fragments.

MOTOR WITH ALL-ROUND PROTECTION



■ Specially developed to give the motor complete all-around protection, the "Safety-Circle" on their Lo-Maintenance motor manufactured by Allis-Chalmers, Milwaukee, Wis., is a wide, solid rib—integrally cast as part of the frame—which forms an unbroken circle of protection around the stator.

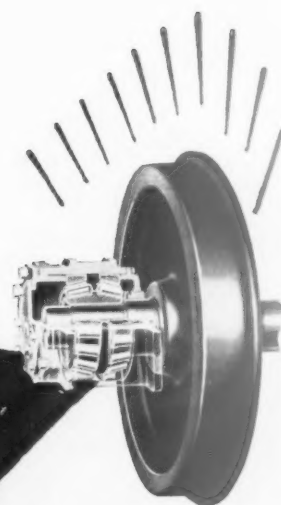
One-piece cast frame and cast end-shields guard the motor from exterior knocks and abuse. A more liberal use of electrical materials makes this motor internally and electrically stronger because current and magnetic densities are less extreme. Improved bearing design delivers smoother performance with full-flow lubrication and easier maintenance. Additional cross strength has been built into the distortionless stator for maximum power efficiency. Rotor is keyed to the shaft for strength, and its outer surface is turned for smoothness and an accurate air-gap. Other Lo-Maintenance features are oil drains at bottom of bearings for easy flushing, removable end brackets, and large conduit box for handy wiring.

When writing The Philip Carey Mfg. Co. please mention Purchasing

**TIMKEN
TAPERED ROLLER BEARINGS**



**TIMKEN
ALLOY STEELS**



**TIMKEN
RAILWAY BEARINGS**



**TIMKEN
SEAMLESS STEEL TUBING**



**TIMKEN
ROCK BITS**

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

When writing The Timken Roller Bearing Company please mention Purchasing



AMERICA DEPENDS ON RELAYS by GUARDIAN

This "G" in the shield . . . high in the air—scouring the sea—sweeping the land . . . in jeeps—guns—tanks—planes—ships—is doing a 100% "all out" job for America!

Strictly defense, production time open for government approved items, with samples immediately available for any job for the U. S. Army, Army Air Corps, Navy, Naval Air Corps, Marine Corps, Signal Corps, Ordnance.

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SAMPLES OF APPROVED CONTROLS
AVAILABLE ON SHORT NOTICE

GUN SWITCH HANDLES
REMOTE FIRING EQUIPMENT
TURRET CONTROLS
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AIRCRAFT CONTROLS
BOMB RELEASES



GUARDIAN ELECTRIC

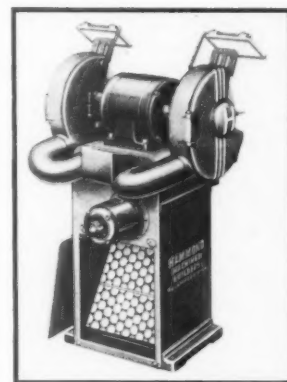
1635 WEST WALNUT STREET

CHICAGO, ILLINOIS

LARGEST LINE OF RELAYS SERVING AMERICAN INDUSTRY

When writing Guardian Electric please mention Purchasing

GRINDER WITH DUST COLLECTOR



■ A compact unit, for tool and light snagging grinding with self-contained dust collector, has been introduced to the market, by Hammond Machinery Builders, Inc., Kalamazoo, Michigan.

The dust collector unit is mounted inside the base of the grinder. The only parts outside are the fan motor, connecting pipes from wheel guards to dust collector, and air exhaust vent-guard.

The filters of fiber glass, three in number, provide most efficient air cleaning. Because of the shape of the air ducts within the base, the heavier grinding particles are carried down to a compartment in the bottom of the filter housing, only the lighter particles and air go through the filters. The filters—in a sliding frame—are easily removed or replaced through the opening shown. Cover plate has been removed. With this system filter replacements are not needed as frequently as those employed in dust collectors in which all the grinding particles are collected by the filters.

The fan of the multi-blade type, the only moving part inside the base, is mounted directly on the fan motor-shaft. The fan motor is connected with the switch controlling the grinder motor—thus making the starting or stopping of the grinder and dust collector one operation.

QUENCHING OIL

■ On the basis that a rapid quench is highly essential in the heat treatment of high explosive shells, E. F. Houghton & Co., Philadelphia, Pa., announces a new and proven quenching oil. This oil was designed specifically to meet the proper range of physical properties, including fire, flash and viscosity, as well as stability, freedom from sludging and rapid quenching speed.

Included in its make-up is a chemical agent which acts as a stabilizer and reduces oxidation or fractional distillation. A synthetic wetting agent is also embodied to provide rapid wetting-out properties, spreading a continuous film of oil speedily over the hot surface of the metal and preventing the formation of gas pockets.

*"Keep them rolling, keep them flying,
keep Democracy from dying"*

—USED BY PERMISSION OF PEARSON AND ALLEN, WASHINGTON MERRY-GO-ROUND

O P M

... and Hack Saw Blades

IN the interests of National Defense and by request of the O. P. M., manufacturers of hack saw blades are restricted in their purchases of High Speed steel (18-4-1) in the ratio of 1 High Speed to 3 of Molybdenum type H. S.

This means that those who have been in the habit of buying our Red Arrow High Speed power blades must, of necessity, expect limited quantities. There simply is not enough to go around. It also means that Red Arrow hand blades will be available in Molybdenum type only — *and it's a mighty fine cutting tool.*

Further, it means that users of High Speed power blades must

satisfy a portion of their demands with a power blade that is of equal quality.

And this can be done!

It can be done and it gives us a chance to repeat what we have said many times in the past: *That for all around production work there is no better blade than Barnes Molybdenum SERVICE.*

Made in hand and power sizes, the performance of these blades has won thousands of friends — and before this emergency is over, it will win many more.

Remember its insignia of quality — the mark of a Barnes Better Blade.



Sold throughout the United States by industrial distributors whose service to industry we respect and value. Through them you can buy Barnes SERVICE Blades today. A trial will convince you of their outstanding quality.



When writing W. O. Barnes Co. Inc. please mention Purchasing

WE'RE GIVING DEFENSE INDUSTRIES

A LIFT

with the new

CM METEOR
HEAVY-DUTY ELECTRIC HOIST

1/2 TON AND UP



★ Speed and more speed is today's battle cry in industry. The New Meteor is already piling up daily evidence of its ability to increase output. Such CM features as true balance, streamlined design, aeroplane type cooling, helical gears, precision bearings and one point lubrication give undermanned and overworked departments a new lift when they adopt the fast, heavy-duty CM Meteor for handling materials. The CM Meteor can be supplied with hook or I-beam trolley, (push type, geared or motor driven) suspension or trolleys suitable for any special monorail track.

Completely illustrated engineering Catalog No. 142 in color, showing details, specifications, applications and point by point advantages of the CM Meteor will be sent on request. Write:

CHISHOLM-MOORE
HOIST CORPORATION

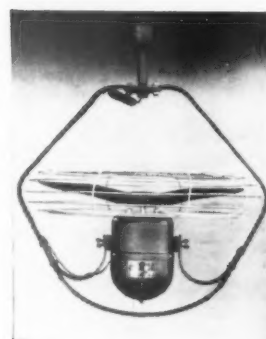
(Division of Columbus-McKinnon Chain Corp.)

120 FREMONT AVE.

TONAWANDA, N. Y.

Branch Offices: NEW YORK • CHICAGO • CLEVELAND

HEAT CIRCULATOR



■ **Fuel** will be scarce this winter. There will be stringent restriction on its use, for the National Defense Program requires every pound of fuel that citizens can spare.

The heat circulator made by Reynolds Electric Co., Chicago, Ill., takes the ceiling heat and the heat "pockets" that exist over radiators and registers, and circulates this previously wasted heat throughout the room.

It is a super power fan that blows the air to the ceiling, then down the walls and back again, causing complete air circulation in the room and providing uniform temperature. This results in a big reduction in the amount of fuel required to keep the room comfortable. It dissipates all smoke and odors and the room is supplied with a constant flow of fresh invigorating air without annoying drafts.

SELF-CONTAINED DUST COLLECTOR

■ **A low cost**, unit-type dust collector having a 600 cfm rating and designed to exhaust pedestal, bench and surface grinders, cut-off machines, etc., is added to its line of dust collectors and air conditioning equipment by Agat-Detroit Mfg. Co., Detroit, Michigan.

Equipped with a 1/4 hp., 3450 r.p.m., 110 volt a.c. continuous duty single phase motor to provide a waterlift of approximately 3.3 inches, it is sufficiently compact to be mounted on a grinder, or on the floor behind the machine.

When connected up with a tool grinder, a two-way intake flange is supplied. Two lengths of 2 inch flexible rubber hose completes the connection between the unit and the wheel hoods. When employed to serve only one wheel, an intake flange to accommodate a 5 inch pipe elbow is supplied.

Removal of the collected dust and dirt is by lifting the louvered cover, taking out the filter assembly and lifting the pan, into which the dust has fallen after being stopped by the filter.

Filters are of the spun glass variety, are said to stop over 99% of the dust and are quickly renewable at low cost. Construction and design is such that it will not support combustion.

When writing Chisholm-Moore Hoist Corporation please mention Purchasing

*It will be a Red-Letter Day for you...
when you start using*

SIMONDS

RED TANG FILES

More metal will be cut... a lot faster and more accurately, with a lot less "elbow-grease". For Red Tang Files have teeth like a metal saw... teeth that roll up long, clean chips like a tool bit... teeth that cut freer and keep sharp far longer than those on regular files.

Simonds makes only one grade of file... *the finest you can buy*... and yet there's no premium in price. Made in every type and size, for every class of work. Get Red Tang Files from your dealer...

**SIMONDS SAW AND STEEL COMPANY
FITCHBURG, MASS.**

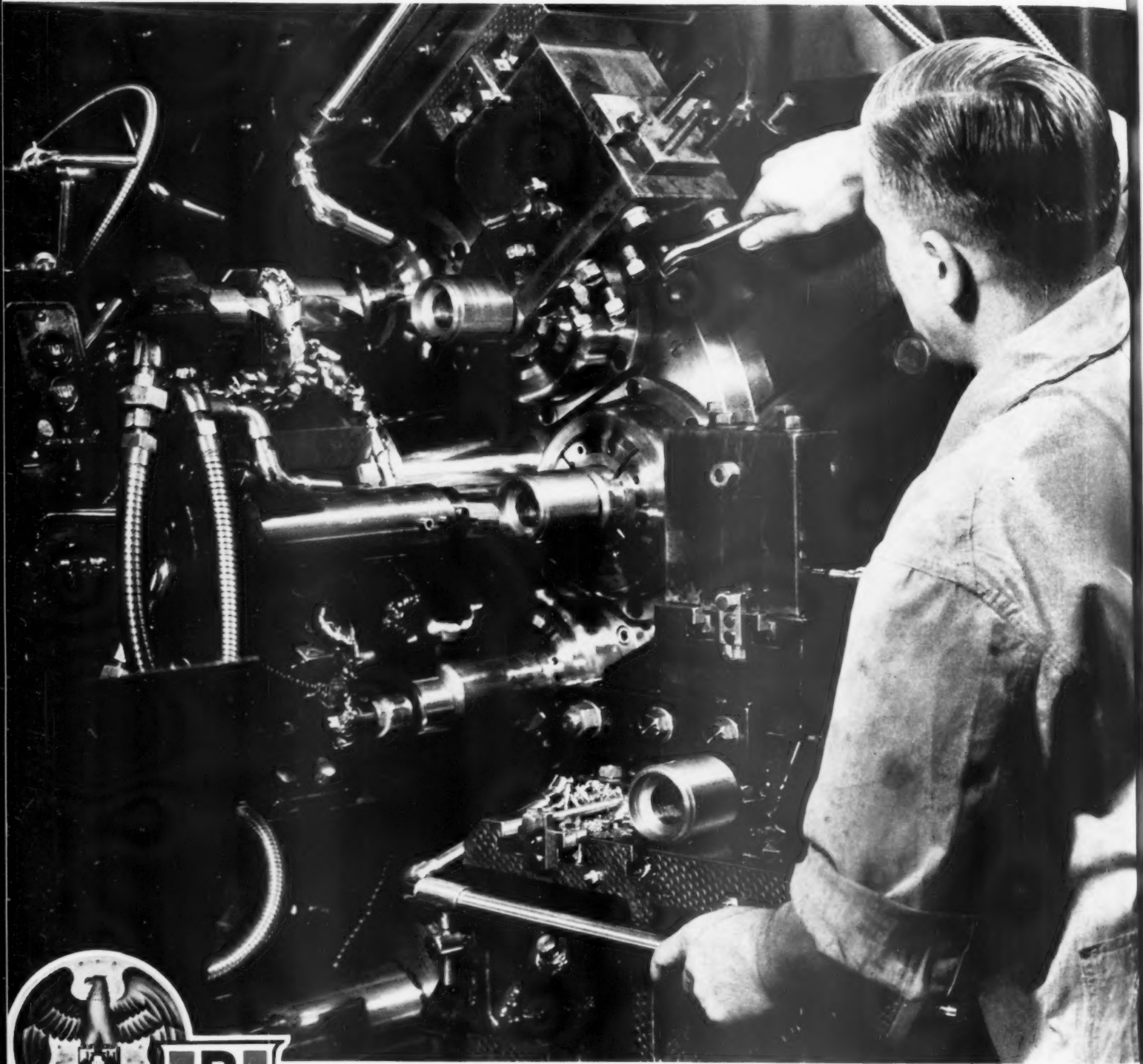
SIMONDS
FAMOUS FAMILY OF
METAL CUTTING
TOOLS

RED COLOR ON THE TANG
TRADE MARK REG. U. S. PAT. OFF.

When writing Simonds Saw and Steel Company please mention Purchasing

IT'S A "SET UP"

Steel Parts Production



REPUBLIC Union Cold

TO STEP UP with UNION SUPERCUT

-the fastest-machining Bessemer Screw Steel made today

If you've never used UNION SUPERCUT, you've never known how much this *improved* high-sulphur Bessemer Screw Steel may help you step up your steel parts production.

UNION SUPERCUT is the fastest-machining Bessemer Screw Steel made today—because it was developed for high machinability—because it has been improved time after time, with each improvement further increasing its free-machining characteristics. As compared with ordinary Bessemer Steel, SUPERCUT frequently has raised output 50% to 100%—sometimes as much as 200% and higher when equipment permitted.

In steel parts production, part design, machines, tools and the set-up may necessitate variance of speeds and feeds to obtain best results in each instance. But in almost every case, the table at the right giving recommended cutting speeds and feeds will prove helpful as a guide in using UNION SUPERCUT. It should be remembered that these figures are approximate—and that they represent averages for the general run of steel parts.

Usually, die chasers for use with UNION SUPERCUT should be ground with a hook of 10°. Threading surface speeds of 60 to 80 feet a minute may be used. For average work, the regular drill point of 59° will be satisfactory.

And high machinability is only one of SUPERCUT'S advantages. It is uniformly sound throughout bar after bar, and remarkably free from the abrasive elements that wear tool edges. It machines to a smooth, bright surface.

Throughout the series of developments to improve machinability, UNION SUPERCUT has sacrificed none of its physical properties, as indicated by these figures for one-inch round, cold drawn:

Tensile Strength . . . 80/95,000 lbs. per sq. in.
Yield Point 70/80,000 lbs. per sq. in.
Elongation in 2" . . . 10/20%
Reduction of Area . . 40/50%
Brinell Hardness . . . 170/202

UNION SUPERCUT responds to cyaniding and carburizing. Best core strength is produced when quenched at 1600° F. from cyanide. Like all Bessemer steels, however,

core strength is comparatively low, and SUPERCUT should be carburized only to develop a hard wearing surface.

Yes, it's a "set-up" to step up steel parts production with UNION SUPERCUT—especially if you are equipped with late model "automatics" capable of higher speeds. However, SUPERCUT will show to advantage on all types of equipment, since heavier feeds may be used even though speeds cannot be increased, and tool life is extended.

The experience, advice and assistance of Union Drawn metallurgists and engineers are available to all users of Union Cold Drawn Steels. Take advantage of this valuable service whenever you may encounter difficulties or problems that handicap high speed parts production. Union Drawn Steel Division, Republic Steel Corporation, Massillon, Ohio.


CUTTING SPEEDS AND FEEDS FOR STANDARD TOOLS WITH UNION SUPERCUT

The table below is based on the use of high speed steel tools and an average eight hour tool life. Feeds are based on the use of multiple spindle type machines using both rough and finish forming tools. On lighter, single spindle machines using only one forming tool, feeds are usually much lower.

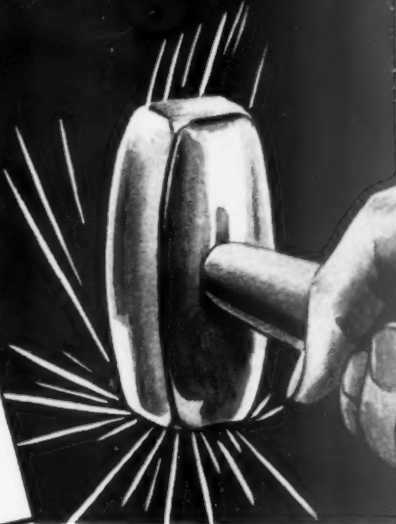
TOOL NAME	Size of Hole—Inches	Width or Depth of Cut—Inches	Surface Feet	Feed—Inches
Form Circular or Dove-Tail		Width .500	225	.003
		1.000	210	.0025
		1.500	210	.0025
		2.000	205	.0018
		2.500	200	.0015
Twist Drills	.250		125	.0054
	.500		125	.006
	.750		140	.007
	1.000		140	.008
	1.250		145	.009
Box Tool Blades		Depth .125	225	.0085
		.250	210	.008
		.375	205	.0065
		.500	200	.0055
Hollow Mills		.062	200	.012
		.125	186	.0096
		.187	179	.0084
		.250	172	.0073
Knurl Tools { } On In Turret { } Off			225	.020
			225	.040
			225	.020
Chamfer & Facing			280	.008-.010
Reamers	under 1/2"		180	.0085
	1/2" or over		180	.012
Cut Off		Width .062	225	.003
		.125	230	.0035
		.187	235	.0035
		.250	250	.004

d Drawn Steels

Now **ROEBLING**
ROEVAR
Magnet Wire



with the
TOUGHEST
insulation you
ever heard of!



**NEWEST OF THE BROAD LINE
OF ROEBLING MAGNET WIRES!**

Yes, it's a new synthetic resin insulating film — strong, flexible and tough. But you can't appreciate just *how* tough — until you've had a sample of Roovar Magnet Wire in your hand and tried it. Under actual test it proved 3 times more resistant to abrasion than ordinary enameled wire.

And, since a fabric wrap is unnecessary, it is smaller — permits the use of **MORE COPPER—LESS INSULATING SPACE.**

In addition, Roovar resists the solvents and high baking temperatures of treating varnishes — stands up under the abuses of modern high speed winding machines and assembly operations. That means **FASTER WINDING—EASIER HANDLING—** because the copper, like all Roebing Magnet Wire is "dead soft".

Made in a wide range of sizes—12 to 40 A.W.G.

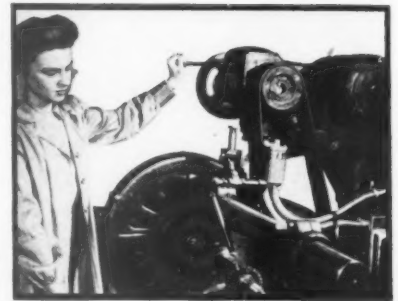
*Roovar is made under license agreement with General Electric Co.



JOHN A ROEBLING'S SONS COMPANY
TRENTON, NEW JERSEY

Branches in Principal Cities

STREAMLINED TRANSMISSION FOR MACHINE TOOLS



■ The new model streamlined transmission for machine tools of all kinds, made by Western Manufacturing Co., Detroit, Mich., is as easy to operate as the automobile gearshift. The idea of this equipment originated at the time of the outbreak of the war in Europe and anticipated the necessity of making it practical for women to operate this kind of machinery, if they are going to "Keep 'em flying" while the men fought at the front.

Hundreds of these transmissions have already been shipped to England for the purpose of modernizing lathes, milling machines, shapers, radial drills, automatics, screw machines, etc. Beside making machine tools easier to operate, they remove the overhead line shafting and eliminate the necessity of dangerous belt shifting by hand on cone pulleys to make speed changes. Thus, much of the hazard normally found in the machine shop is avoided.

NON-CLOG PUMPS

■ For all duties involving the handling of heavy liquids, sludge, liquids containing heavy settleable solids, effluent and other wastes—for either dry or wet pit installation, the non-clog pumps, made by Aurora Pump Co., Aurora, Ill., can be used.

They are available in both vertical and horizontal types in a range capable of handling solids up to 6" in diameter. The vertical pumps for dry pit installation may be installed at any depth and are equipped with flexible "Needle-Bearing" shafting; thus ease of installation, avoidance of both misalignment and excessive weight are achieved. The impellers are of enclosed, non-clogging type requiring no screens. Large waterways, extra blade width and rounded forward ends permit passage of solids, rags, etc., and are only slightly smaller than discharge orifice. The vertical pumps for wet pit installation are generally furnished with semi-open impeller (otherwise are the same as the enclosed impeller pumps), and can be furnished with enclosed impellers if required. Discharge may be turned to any position. Casings are provided with cleanout handhole. Detachable suction and packing covers provide ready access. All details are of latest improved type for convenience and smooth, quiet performance.

When writing John A. Roebing's Sons Company please mention Purchasing

HOW TO KEEP PIPE LINES WORKING

...round the clock!



These Bulletins Help Train Piping Crews; Aid in Getting Better Service From Valves and Fittings

VICTORY demands round the clock production! And while the burden will have its toll of plant equipment, industry's pipe lines—its *life lines*—must not fail in this task.

Keeping pipe lines working means getting better service from valves and fittings. That demands *more and better trained* men to keep up with and ahead of wear and tear. And that's where Crane Shop Bulletins are helping industry. These Bulletins, designed especially for maintenance workers, are full of prac-

tical pointers on installation and care of piping. They help train new men—improve the work of veterans as well.

The Bulletins are being widely used in maintenance shops and employee training schools. In the hands of your men, they will also help prevent piping trouble—and keep production moving!

Crane Shop Bulletins are offered to every plant—big and small—to help speed Victory. No charge—no obligation! For your supply, just call your local Crane Representative—or write to us.



CRANE

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VALVES • FITTINGS • PIPE
PLUMBING • HEATING • PUMPS

NATION-WIDE SERVICE THROUGH BRANCHES AND WHOLESALERS IN ALL MARKETS

When writing Crane Co. please mention Purchasing

Before you O. K. a lamp replacement order . . .

**LOOK FOR THIS
FAMOUS NAME**



Westinghouse

MAZDA FLUORESCENT LAMPS



When you specify Westinghouse Mazda on your fluorescent lamp orders, you make sure of getting all the benefits and economies made possible from 55 years of Westinghouse research and manufacturing experience. Westinghouse Mazda Fluorescent Lamps are made to exacting standards of quality. They are specifically designed to keep your lighting system at peak efficiency, give you fluorescent lighting that is tops in dependability and economy. Be sure to ask your Westinghouse Mazda Lamp Distributor how you can save money through liberal quantity purchase discounts.



**WHEN YOU SPECIFY WESTINGHOUSE MAZDA YOU
GET TOP QUALITY, PROMPT SERVICE, EXPERT HELP**

Your Westinghouse Mazda Lamp Distributor has all sizes and colors of Westinghouse Mazda Fluorescent Lamps in stock, ready for prompt delivery. Do not hesitate to call on him for any help you might need in planning a new lighting installation or in getting the most from your present lighting system. He is prepared

to offer you expert assistance when you need it. And, your Westinghouse Mazda Lamp Distributor will be glad to discuss with you the complete money-saving discount schedules available on quantity lamp purchases. Westinghouse Electric and Manufacturing Company, Lamp Division, Bloomfield, New Jersey.

For More Top-Quality Lighting Installations—
Westinghouse MAZDA FLUORESCENT LAMPS

GAS PROTECTION on the INDUSTRIAL FRONT

M·S·A EQUIPMENT FOR EVERY RESPIRATORY HAZARD

Time-proved safeguards, built by the world's largest manufacturers of approved safety equipment, possessing every refinement for better protection, comfort and service that keep men safe on the job. Let us send you our descriptive Bulletins!



M. S. A. ALL-SERVICE GAS MASKS

Efficient protection against all industrial gases, fumes and smoke—singly or in combinations, including carbon monoxide. All-Vision Facepiece. Built-in Self-Timer.



M. S. A. INDUSTRIAL GAS MASKS

Masks for each individual industrial gas hazard (excepting carbon monoxide and gases containing it), combining specific protection for wearer with long service life.



M. S. A. HOSE MASKS

Supply safe outside air through hose to mask wearers in confined spaces where gas concentrations or oxygen deficiency exist. Hand- or motor-driven blowers.



M. S. A. OXYGEN BREATHING APPARATUS

Two compact models, providing dependable self-contained oxygen supply to users in unbreathable air, for periods of one and two hours, respectively.

OTHER M. S. A. PRODUCTS

Approved Dust Respirators . . . Inhalators . . . Masks of all types . . . Gas Detectors . . . Safety Goggles . . . Protective Hats and Caps . . . Edison Electric Cap Lamps . . . Safety Belts . . . Safety Clothing . . . Dust Instruments . . . First Aid Equipment. Descriptive Bulletins will be sent on request.

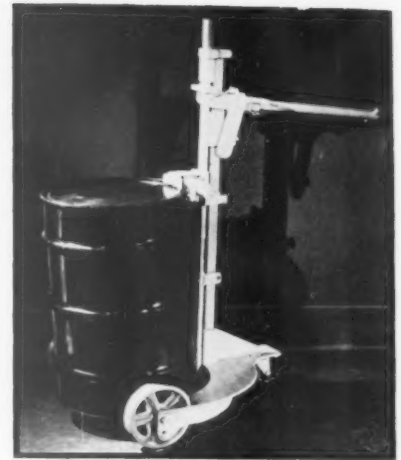


MINE SAFETY APPLIANCES COMPANY

BRADDOCK, THOMAS AND MEADE STS., PITTSBURGH, PA.

District Representatives in Principal Cities

DRUM AND BARREL CARRIER



■ **This model** was designed and constructed for handling litherage drums which are principally used as containers of heavy materials, by Ernst Magic Carrier Sales Co., Buffalo, N. Y.

One man using only one hand with this carrier, takes the place of several men formerly required to break-over, balance and move drums. In addition, all accidents common to handling loaded containers are prevented by the single lifting device and self-balancing tri-wheel design built into these carriers.

Combined with these safety features are easier, speedier, less work, lower cost factors that are important in stepping up production in materials handling. Copper silicon alloy metal wheels and locking device are available where precaution against explosions is necessary.

BLACKOUT MATERIALS

■ **The Flintkote Company**, New York N. Y., has developed a group of special products and processes for blackout purposes and protective concealment (camouflage) some of which have been widely used in England under air raid conditions much more severe than can logically be expected in this country. These products and specifications for their use are immediately available.

Materials of this type and the methods of application involved have been recommended by Defense agencies.

The characteristics of a satisfactory blackout treatment are as follows: It must furnish complete light obscuration; it must be non-reflective; it should make window glass shatterproof; it must be easily applied; it must be easily removed; it should be non-toxic, odorless and non-inflammable, and it must be readily available.

Flintkote products developed to meet these requirements include: A non-inflammable (in liquid form), non-toxic asphalt emulsion for brush or spray application on windows and skylights. Also for roofing, masonry, wood and metal surfaces for complete blacking-out of an entire building; blackout mem-

When writing Mine Safety Appliances Company please mention Purchasing

MORE CHIPS PER MINUTE



with **CIRCLE "C"** **SUPER HIGH SPEED STEEL**

No matter what the unit of time—minute, hour, or day — the *true measure* of a cutting tool's effectiveness can be judged by the *net* amount of metal it removes in a given period.

CIRCLE "C" Cutting Tools are constantly demonstrating their capacity to work at 25% faster machine speeds, with greatly increased cuts and feeds and far fewer shut-downs for re-grinds on the hard and heat-treated alloys used in produc-

tion of *shells, aeroplane engines and other armament*. Thus, this high cobalt-tungsten Super High Speed Steel, distinguished in a peace-time economy for its prodigious chip removing ability, now occupies a unique place among steels in Defense industries. *Although a tungsten steel it actually conserves tungsten through greater production as compared with other tungsten high speed steels.*

FIRTH-STERLING STEEL COMPANY

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NEW YORK	CHICAGO
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THINGS YOU SHOULD KNOW

if you use pumps!



Things that make a big difference in performance between ROPER "hydraulically balanced" PUMPS and other pumps.

GEARS THAT FLOAT IN OPERATION SAVE YOU TIME AND MONEY! The pumping gears in ROPER "hydraulically balanced" PUMPS have hollow shafts so that internal pressure is equalized at all points. These gears are entirely separate from the drive shaft and are connected only by a sliding joint which permits them to actually "float" in operation. This sliding joint plus a special collar on shaft absorbs any shock or end thrust.

This feature means big savings in time and money for you because "hydraulically balanced" pumps are more efficient, last longer and permit periodic inspection of internal parts without disturbing piping or power unit.

REPLACEABLE BEARINGS GIVE PUMPS LONGER LIFE—The 4 large bearings (two on each side) in ROPER "hydraulically balanced" PUMPS are designed and constructed to withstand severe operating abuses and adequately handle peak loads. These flanged high lead bronze bearings also act as wearplates to protect face and backplate from wear. Can be replaced easily and inexpensively.

ROPER MECHANICAL SEAL REDUCES POWER REQUIREMENTS—Each ROPER "hydraulically balanced" PUMP is regularly equipped with a Roper Mechanical Seal. It saves money by reducing power consumption and keeps leakage to a minimum. Especially desirable where re-packing is not practical—that also saves you time and money.

SAVES FLOOR SPACE—ROPER PUMPS are designed to operate at direct motor speeds, thus eliminating gears, belts, etc. . . . saves space, and what plant doesn't need more space?

ALWAYS PRIMED—Once primed and in operation a Roper will always pick up its own prime—ready for instant action.

AS DEPENDABLE AS OLD FAITHFUL—That is the reputation earned by dependable performance year in and year out.



FREE CATALOG

Send for your free copy of Catalog 937. It contains complete information on 16 different sizes of Roper Pumps. Learn how you can save money and trouble on your pumping problems.



ROPER Rotary pumps

GEO. D. ROPER CORP. ★ ★ ★ ROCKFORD, ILLINOIS

When writing Geo. D. Roper Corp. please mention Purchasing

THIS HAPPENED FROM COAST TO COAST

United Air Lines say this about Roper Pumps on their refueling tank trucks . . . "first, they are **SPEEDY** and **DEPENDABLE** . . . second, their **QUIET** operation makes them ideal for refueling sleeper planes . . . third, they are the most **EFFICIENT** we have ever used . . ."

THIS HAPPENED IN ILLINOIS

A manufacturing plant was using five pumping outfits . . . average life of each pump, 16 hours and cost per pump, \$16.65. Roper analyzed the problem and made recommendations. **RESULT**—average life of pump was **s-t-r-e-t-c-h-e-d** to 13 months. Net saving to customer in 13 months—\$29,690.00.

THIS HAPPENED IN OHIO

Weaver-Wall Co., Cleveland, use Roper Pumps for pumping hot asphalt at temperatures up to 400° eight hours per day in the winter, twenty-four in the summer. Some test! But Roper Rotary Pumps endured for more than 12 years.

brane treatment—for more permanent blackout and shatterproofing purposes . . . a tough fabric embedded in and coated with blackout static coating; blackout panels—strong, light, rigid, weatherproof black sheets for exterior or interior use. Hang like screens or storm-sash. Excellent for residential blacking-out or where use of daylight is imperative; blackout paper—waterproof paper or felt for temporary, emergency blacking-out.

For protection against incendiary (thermite) bombs they have developed a mastic coating for roofs which has been used extensively in England. Experience with this fire retardant mastic in England indicates that in proper thicknesses it effectively retards the spread of fire from incendiary bombs, thus providing additional precious time to extinguish the original blaze.

In the field of protective concealment, they have developed a complete line of camouflage paints and adhesives conforming with Defense agency requirements. Since the art of camouflage is often highly specialized, individual problems are involved. They are prepared to cooperate and offer prompt service.

CONTOUR MILLING MACHINE



■ **This semi-automatic** milling machine, specially designed and built by Snyder Tool & Engineering Company of Detroit, Mich., for radius contour milling the bolt bosses on connecting rod caps, features three spindles and three revolving fixtures, for machining three parts at one time.

The spindles are quill type, ball bearing mounted, and driven by V-belts through spur gears running in oil; they have quill clamps, and vertical adjustment to compensate for tool wear. Coolant is supplied by a pump from a tank in the machine base. The fixtures are mounted on a main slide, and are revolved by a cross slide; both slides are hydraulically operated. The machine is electrically controlled by push buttons.

Three parts are loaded on locating pins, in drilled and reamed holes, and manually clamped. The machine cycle is automatic: As the spindles start rotating, the main slide moves forward to the cutters and trips into feed until full depth of cut is reached. Then the cross

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Contains special section on Government approvals!



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Carr Fastener Co. of Australia, Ltd., Royal Park, South Australia

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SHAKEPROOF Inc.

2501 North Keeler Ave., Chicago, Ill.

Please forward my copy of your new Shakeproof Catalog No. 42!
(Please Print)

Firm Name _____

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City _____ State _____

Signed by _____ Position _____

WHEN HEAVY LOADS CAUSE Machine Tool Chatter or Hot Bearings and Gears

USE

"STURACO"

EXTREME PRESSURE ("EP")

MACHINERY OILS & GREASES

• Here is the answer to many of your lubrication problems caused by today's production demand of heavy loads, high speeds, and continuous operation of machinery and machine tools. "Sturaco" EP Oils and Greases, without any change in your accustomed viscosity or consistency, offer a minimum of 300% increased load carrying capacity with notable low torque.

Lubrication of ways—spindle bearings—gear heads—elevating screws—speed reducers—are typical examples where "Sturaco" application has solved tough lubrication problems. If you need help, write or phone today.

SEND FOR the new "Sturaco" booklet outlining laboratory research behind this genuine development, describing typical applications and listing various grades.



For All Cutting Fluid Problems
D. A. STUART OIL CO.
Chicago, U.S.A. • LIMITED • Est. 1865
Warehouses in All Principal Metal Working Centers

When writing D. A. Stuart Oil Co. please mention Purchasing

slide revolves the fixtures in a half circle, on the centerline of the bolt holes, to mill the radius contour around the bolt bosses. When the cut is complete, the main slide returns to starting position and cross slide revolves the fixtures back to loading position. The operator reverses the parts in the fixture and the machine then repeats its cycle to mill the other boss on each part.

PORTABLE CONTROLLED FLOW COOLANT PUMP



■ A portable coolant pump, easily attached to any machine tool, has been announced by Gray-Mills Co., Inc., Chicago, Ill. Outstanding feature of the pump system are its portability, ease of control of coolant flow—from a drop to full stream, capacity to withstand continuous operation, ease of replacement of all wearing parts, the ability to handle coolants of all but extreme viscosities, an easily cleaned strainer and low price.

Tests run by the manufacturers in machine shops and the plants of machine tool manufacturers indicate production increases as high as 100% and tremendous cost reduction.

The pump—which comes with all necessary fittings to attach it to the machine tool, plug into the electric line and put it into operation—is particularly recommended for drill presses, lathes, tapers, cut-off saws, grinders, abrasive finishing machines and small mills.

BLACKOUT PAINT

■ Thompson & Company, Oakmont, Pa., have developed in their laboratories a black paint of complete opacity possessing remarkable weather-resisting qualities together with the feature of overnight drying. It comes ready to use, and is applied quickly and easily by either brush or spray. It is a dead flat black that totally blocks the passage of light through defense plant windows. Prices on the newly developed special Blackout Paint are in line with durable, quick-drying paint of high quality.



GLAMOUR BOY TO DOUGHBOY

The popular appeal of certain applications long ago earned for plastics the title of "glamour boy" of industry.

But today plastics is a doughboy—contributing vitally to America's war effort, doing his job in battleships, tanks, tractors and submarines, helping make guns roar and planes fly.

At General Electric the change from glamour boy to doughboy has been simplified. For at General Electric, plastics have had a long training for the job they have been called upon to do. Parts for industrial

equipment always have formed the bulk of G.E.'s production in five plastics plants, so the production of war goods is not a new story.

General Electric's ability to produce plastics for war is primarily based on the fact that G.E. is a self-contained unit with complete facilities for the manufacture of finished plastics parts. Development, compound manufacture, designing, engineering, moldmaking, molding and laminating are all a part of the service at One Plastics Avenue, Pittsfield, Mass.—address of G.E.'s headquarters for plastics.

PD-2

P L A S T I C S

GENERAL



D E P A R T M E N T

ELECTRIC

WE WILL SATISFY THOSE WHO DEMAND THE BEST



FOR VICTORY—

and the metal-working Industry—The Winter Brothers Company are utilizing every man and machine to produce Quality taps in ever-increasing volume; without sacrificing that vital factor which built their popularity—Accuracy.

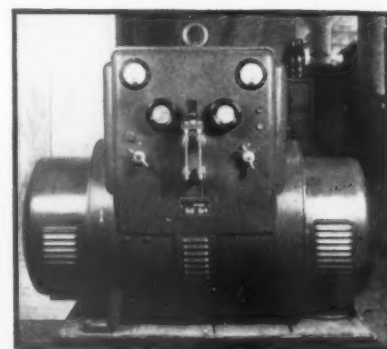
Winter Taps are precision tools—handle them carefully for maximum production.

A DIVISION OF
THE NATIONAL TWIST DRILL & TOOL CO.
DETROIT, MICHIGAN



When writing Winter Brothers Company please mention Purchasing

ANODIZING MACHINES



■ **Motor Generator Corporation**, Troy, Ohio, announces a complete line of anodizing machines available from 125 through 875 amperes at 20, 40, or 50 volts d.c. Motor sizes range from 7½ through 55 horsepower generating from 5 to 35 kw. Each machine is furnished complete with control cabinet ready for anodic treatment of aluminum and its alloys whether the Alumilite, Bengough-Stewart, or Bureau of Standards process is used in the operation.

Features of the anodizing sets are: Constant speed guaranteeing constant voltage and close control over the entire current range. Positive voltage regulation insures continuous capacity with high overall efficiency. Compact single unit construction, ball bearing mounted, offering longer life with less maintenance.

Units are equipped completely with separate exciter; control cabinet housing an accurate reading ammeter with shunt-voltmeter; exciter and generator field rheostats; double pole, single throw work circuit switch; positive and negative terminal studs; and across-the-line switch giving overload as well as under voltage protection or release to the motor.

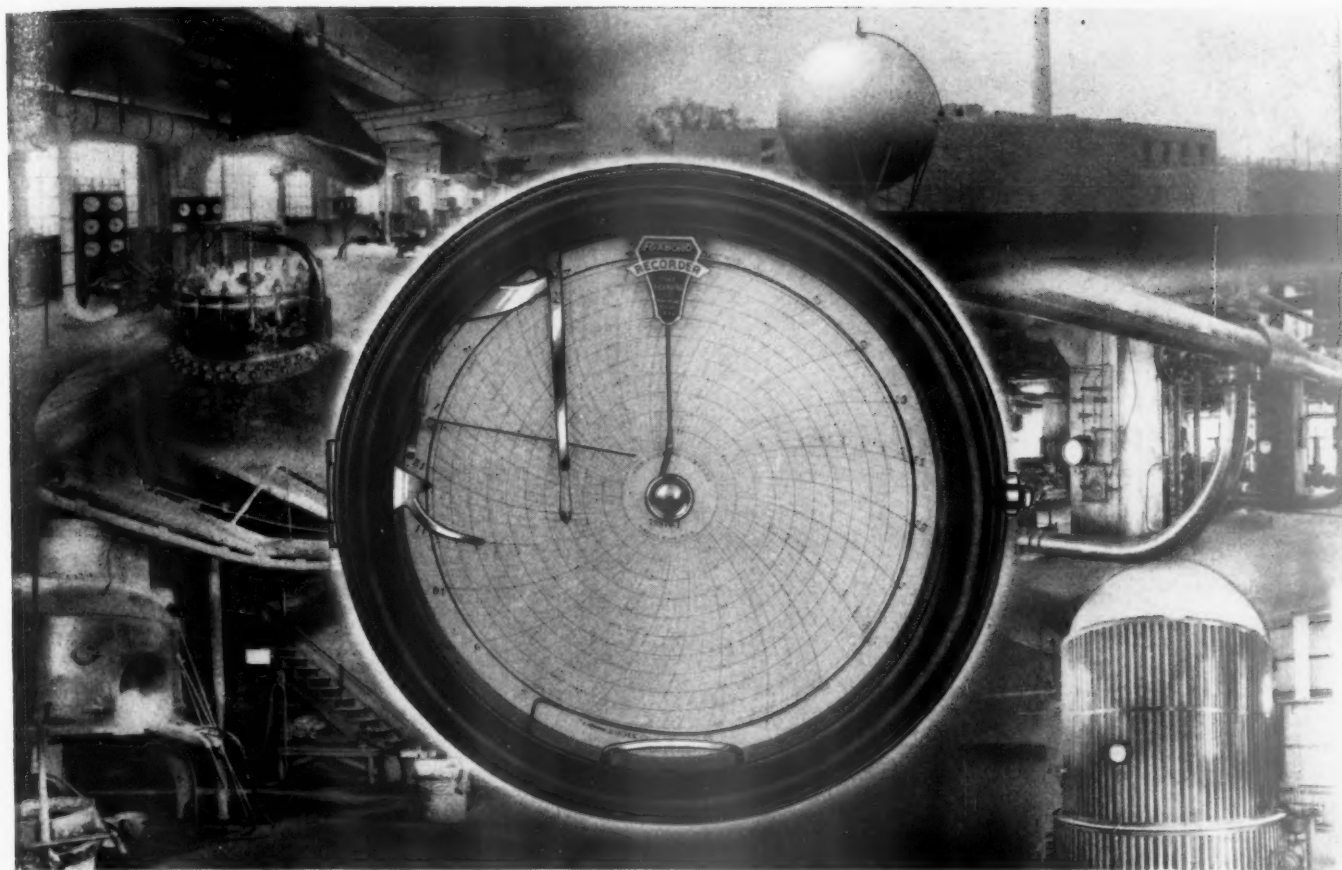
PORTABLE FLEXARC D-C WELDER

■ **For all-purpose** welding in industrial plants, shipbuilding, and for general maintenance work, a portable flexarc welder is announced by Westinghouse Electric & Mfg. Co.

Attractively finished in blue and gray, the enclosure is made of a one-piece weatherproof steel frame mounted on a 4-wheel running gear. Ratings are 200, 300 or 400 amperes for 220, 440 and 550 volt a.c. circuits; 2 and 3 phase, 25, 50, and 60 cycles.

Current adjustment is obtained by a ball crank making it possible to preset the desired current before welding. Steady current regardless of arc length is provided by arc control which can be adjusted to suit the welding job.

In operating, a magnetic shunt is placed in the armature reaction flux



Name Your Pressures . . . We Can Fit 'Em!

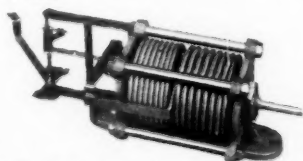
WIDE RANGE OF SPRING TYPES



Helical Movement, in steel, bronze, beryllium copper or other alloys, for pressures up to 10,000 lbs.



Spiral Movement, in steel, bronze or other alloys, for pressures up to 100 lbs.



Hydron Spring of bronze or alloys, for absolute pressure or special application.

When you install a pressure recorder, why not make sure that it's specifically suited to your installation? For, there is no single type of pressure-measuring element that gives top results in accuracy and durability for every job.

All you need to do is name your pressure range and service conditions . . . Foxboro can supply a pressure recorder with the type of measuring element that exactly fits! For oil, steam, water, gas, brine or other fluids . . . for pressures from full vacuum to 10,000 pounds . . . Foxboro Pressure Recorders are de-

signed to insure sustained accuracy without maintenance!

This specialized design of Foxboro Pressure Recorders is just one example of Foxboro Creative Instrumentation . . . engineering that gets results for industries through original development and application of recording, controlling and indicating instruments. Write for new complete Catalog 22A of Foxboro Pressure Recorders. The Foxboro Company, 178 Neponset Avenue, Foxboro, Massachusetts, U. S. A. Branches in principal cities of U. S. and Canada.

PRESSURE RECORDERS

by **FOXBORO**

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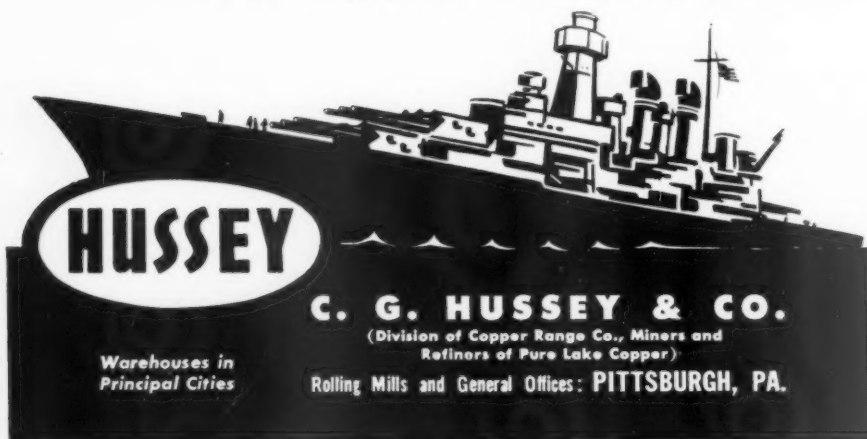


H

USSEY COPPER

**IS WORKING NIGHT AND DAY
TO HELP US . . .**

"It's good news to know that the Hussey rolling mills, third largest fabricators of copper sheets in the United States, are working on a war-time basis, too!" It's further assurance that producers of essential materials utilizing copper will have an adequate supply for their immediate requirements.



path. Output current of the welding generator is adjusted by ball crank control of the position of a laminated iron leakage block. This block serves as a magnetic shunt for the reaction flux of the machine, and its position with respect to the main flux path determines the welding current. By this principle, no field rheostat exciter or external reactor is required.

Driving motors are of the squirrel cage induction type with low starting current, high efficiency and high power factor. Push button-controlled magnetic De-ion starter for the motor provides low voltage protection by removing motor from line if the line voltage is too low. Dual voltage coil on starter makes it possible to change operation from 220 to 440 volts without changing contactor coil. Automatic burnout protection is provided by a bimetal relay mounted on the motor stator windings.

ASBESTOS-CEMENT BUILDING



■ **Anticipating** that the shortage of metals, especially steel, will become progressively greater, the Keasbey & Mattison Company, Ambler, Pa., has developed a building made entirely of asbestos-cement products.

The "Century" asbestos-cement tubular sections are used as structural members, "Century" asbestos corrugated sheathing for the roof and "Century" sheet asbestos for the sidewalls.

These asbestos buildings are based on units 16 feet long by 12 feet wide by 15 feet clear heights. Thus a building of any size can be constructed by simply combining the required number of 12 feet by 16 feet units.

Installation can be handled by unskilled workmen, keeping erection costs at a minimum. In addition, these units are fire resisting, weather resisting and maintenance-free.

BUS DUCT

■ **For industrial** secondary power distribution systems, a new bus duct is announced by Westinghouse Electric and Manufacturing Company. Units are of the plug-in and feeder types.

Composed of copper busses, Prestite separators, and a dust-tight metal enclosure, the unit is available in ratings of from 250 through 1500 amperes. At currents below 1500 amperes, long life,

When writing C. G. Hussey & Co. please mention Purchasing

* **HALL MARK OF** *Strength*

*That letter "C" on the head of Cleveland 1035 heat treated hexagon head cap screws is your guarantee of the greatest tensile strength to be found in any regular stock screw.

THE CLEVELAND CAP SCREW CO., 2917 EAST 79th STREET, CLEVELAND, OHIO



BY THE BOX, OR BY THE MILLION... BUY

CLEVELAND CAP SCREWS

SET SCREWS • BOLTS AND NUTS

*Address the Factory or our Nearest Warehouse: Chicago, 726 W. Washington Blvd. • Philadelphia, 12th & Olive Streets
New York, 47 Murray Street • Los Angeles, 1015 E. 16th Street*

When writing The Cleveland Cap Screw Co. please mention Purchasing

★ FAULTLESS ★

CASTERS SAVE MAN-HOURS

Waste of man-hours in industry is inconceivable! Uninterrupted production in factories, shipyards, ordnance plants demands the use of better-than-ordinary mobile equipment. And that's where Faultless Engineered Casters play their part . . . preventing waste of time, eliminating breakdowns, keeping the wheels of production turning at capacity. Condensed Catalog Sheet F-9138 will help you follow thru in '42.

100 Series—Swivel Truck Casters

Ruberex Style No.	Semi-Steel Style No.	Diameter of Wheel	Overall Height	Size of Plate
121-2	108-2	2"	2 1/2"	1 7/8" x 2 1/2"
121-2 1/2	108-2 1/2	2 1/2"	3 1/4"	2 3/4" x 3 3/4"
121-3	108-3	3"	3 1/2"	3 1/8" x 4 1/8"
121-4	108-4	4"	5"	4" x 5 1/2"
121-5	108-5	5"	6 1/2"	5" x 5 3/4"
121-6	108-6	6"	7 1/2"	6" x 6 1/2"



500 Series—Rigid Truck Casters

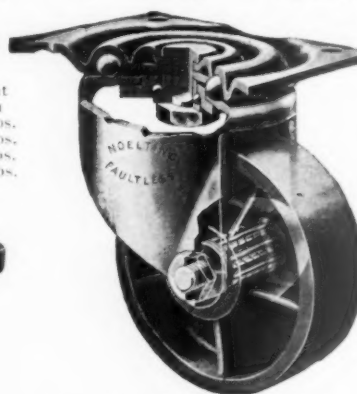
Ruberex Style No.	Semi-Steel Style No.	Diameter of Wheel	Overall Height	Size of Plate
521-2	508-2	2"	2 1/2"	1 1/2" x 2 1/2"
521-2 1/2	508-2 1/2	2 1/2"	3 1/4"	2 1/4" x 4 1/4"
521-3	508-3	3"	3 1/2"	2 1/2" x 4 1/2"
521-4	508-4	4"	5"	3 1/8" x 6 1/8"
521-5	508-5	5"	6 1/2"	3 1/2" x 7 1/2"
521-6	508-6	6"	7 1/2"	3 7/8" x 8 7/8"

200 Series—Heavy Duty Swivel Truck Casters

Semi-Steel Style No.	Diameter of Wheel	Kind of Bearing	Overall Height	Size of Plate	Weight Each
206-5	5"	Hyatt	6 1/2"	5" x 5 3/4"	9 1/2 Lbs.
206-6	6"	Hyatt	7 1/2"	6" x 6 5/8"	13 3/4 Lbs.
208-5	5"	Plain	6 1/2"	5" x 5 3/4"	8 Lbs.
208-6	6"	Plain	7 1/2"	6" x 6 5/8"	13 Lbs.



No. 1506-8 Faultless Dreadnaught with triple ball bearing swivel and 8" semi-steel wheel for extra heavy duty.



Dreadnaught—Heavy Duty

Style No.	Kind of plate	Kind of Wheel	Overall Height	Approx. Wt. Ea.
1506-8	Swivel	Semi-Steel	10 5/8"	44 Lbs.
1516-8	Swivel	Rubber	10 5/8"	44 Lbs.
1706-8	Rigid	Semi-Steel	10 1/2"	36 1/2 Lbs.
1716-8	Rigid	Rubber	10 1/2"	32 Lbs.

Hyatt Bearing Wheels, Dia. and Face 8"x2 1/2"
Hub Length 3 1/2"—Axle 3/8"
Swivel plate 8x9 1/2", holes C-C 7 1/2"x6"
Rigid plate 6x9 1/2", holes C-C 7 1/2"x3 1/2"

FAULTLESS CASTER CORPORATION

Dept. P-2, Evansville, Indiana

Representatives in Principal Cities
Canadian Factory: Stratford, Ontario
Member of the American Supply & Mach. Mfrs. Ass'n

★ FAULTLESS CASTERS FOR INDUSTRY ★

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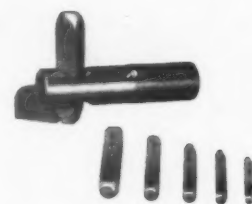
hot rolled sheet steel is used; at values of 1500 amperes or above, a feeder duct of different construction is available.

Plug-in sections are supplied in 10-foot line units with outlet service staggered every 12 inches along a run. Outlet receptacle covers are not removed but simply slide along duct to expose plug-in connections.

Heavy silver plating of contact areas at bus bar joints assures good contact. Insulators are of Prestite insuring maximum mechanical strength. Complete insulation of plug-in receptacles aids safety by preventing push-over in making or breaking plug-in contacts.

To install, the bus duct is hung by narrow double-strap hangers either edge-wise or flatwise, depending on availability of plug-in. Where suspension rods are used, fastening is made to any convenient overhead suspension point and adjustable cantilever clamp slides along the duct to the point of alignment.

HAND TOOL HOLDER



■ A completely new device which is made to hold square or octagon shaped tools such as steel hand stamps, chisels and other similar hand tools is announced by M. E. Cunningham Co., Pittsburgh, Pa. This holder is made so as to be adaptable for holding any size piece from 1/4 inch to 3/4 inch and other 1/2 inch ranges up to 1 1/4 inch square. This holder provides a means for holding the different hand tools to eliminate possibility of split or smashed fingers usually caused by foul hammer blows. Also, because the stamp (or other tool) is held securely in this holder there is no chance of it flying and causing injury to nearby workers. It is possible to get a clearer and more even impression with stamps held in this holder because they can be held squarely in place, and where necessary, can be hit harder so as to drive in deeper.

Holder can be furnished with a lever on front end which protrudes at the proper angle to allow the operator to make several impressions in a straight line.

Holder is made from steel tubing which is slotted through in a "V" shape to provide for holding tool. A special coil spring fits inside of the tubing and is held in place by a back plate on one end of the tubing. A smaller piece of tubing is placed at the other end of the coil spring and a special vulcanized rubber plug is placed into the tubing. The spring provides the tension against the tool while the rubber provides the friction to prevent tool from flying out of holder.



He *Was* a "Has-Been"

THE best years of old Dan's life had netted a wealth of experience and skill in the performance of his trade. Whenever the youngsters in the shop were stumped they went to Dan for help.

Then Dan's eyes went bad and he started to slow down. Errors happened with increasing frequency. When his fellow workers realized that Dan had become a "has-been", they all felt badly. Industry could no longer have the full benefit of his specialized knowledge and skill. Only years of training could produce another man his equal.

Dan's story is typical of thousands of men throughout industry. But, thanks to Bausch & Lomb Prescription Ground Safety Goggles Lenses, Dan and many of his kind will go back to the important work of which their country stands in dire need.

Prescription Ground Hardened Lenses offer correction to defective eyesight as well as protection from physical impact. Industrial organizations have found that these lenses can salvage thousands of men who could no longer do the accurate work for which they were trained. They know that the work of younger people who have visual deficiencies is improved and speeded up. They know also that eyes protected with B&L Safety Goggles are safe from injuries which result in lost production time and even permanent loss of vital manpower. Bausch & Lomb Optical Co., 741 St. Paul Street, Rochester, N.Y.

BAUSCH & LOMB

Safety Goggles

When writing Bausch & Lomb Optical Co. please mention Purchasing

SERVING THE NATIONAL DEFENSE PROGRAM

HOLO-KROME *fibro forged* SOCKET SCREWS

 Socket Set Screw



*Completely
Cold
Forged*

GUARANTEED
Unfailing PERFORMANCE



THE HOLO-KROME SCREW CORP., HARTFORD, CONN., U.S.A.

When writing The Holo-Krome Screw Corp. please mention Purchasing

PLASTIC FLASHLIGHT



■ Within seventy-two hours after the country's first blackout, orders for more than 600,000 plastic flashlights were received by the Gits Molding Corporation, Chicago, Ill. One hundred thousand of these were ordered by dealers in Vancouver, B. C., and the rest by dealers in other coastal cities, both east and west. Many orders have also been received from the Red Cross and from veterans' hospitals and auxiliary fire and police departments.

These flashlights are molded of a durable plastic and structurally designed to afford a practically indestructible unit. They are available in a wide range of lustrous colors. Case is non-conductive, equipped with a durable plastic lens.

INSULATION PRODUCT

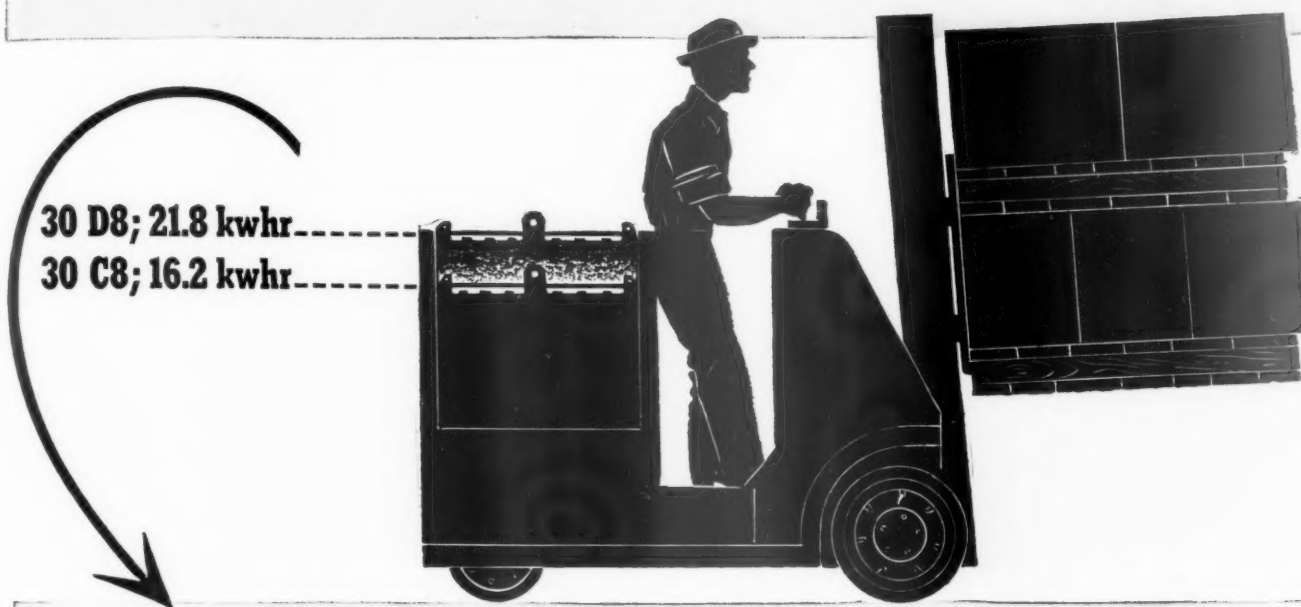
■ Problems encountered in insulating small diameter heating lines on large airplanes have resulted in development of a product known as "Insutube" by Union Asbestos & Rubber Co., Cicero, Ill. Light weight, small size, and ability to "stay put" under severe shock and vibration are listed as features which promise to have wide appeal for many industrial installations where small pipe or tubing is used to carry hot gases or liquids.

The material is made in the form of a seamless braided tube of long fibre asbestos with a wall thickness of $\frac{1}{2}$ ", and is offered in a choice of sizes to fit pipes 1" I.D. and smaller. It is supplied either plain or with a water and grease repellent coating. In applying the insulation is slipped on before assembly and is clamped at either end after being stretched tightly length-wise on the pipe. Simple wire clamps are available or any ordinary hose clamp can be used.

The insulation is ordinarily packaged in reels of 100 ft. length, but can be furnished in any desired length. The weight averages about .30 lb. per running foot in the $\frac{1}{2}$ " I.D. size. The standard grade is recommended for temperatures up to 500°F., and special material can be supplied for higher temperatures.

How to get more work

FROM YOUR BATTERY INDUSTRIAL TRUCKS



THIS SKETCH illustrates how a center-control fork truck can be powered for various daily operating requirements. If it is now equipped with 30 C8s and does 9 hours of continuous work daily, it can do 12 hours with 1 set of 30 D8; 18 hours with 2 sets of 30 C8; 24 hours with 3 sets of 30 C8 or 2 sets of 30 D8. Under certain conditions still other combinations are practical.

HAS defense production raised your operating rate, and made it necessary for you to get correspondingly more work from your industrial trucks?

Chances are you can get the needed additional work from them merely by providing more battery capacity and the additional work will be done with the same high degree of dependability and economy you have learned to expect from a battery truck properly battered for the job.

The sketch above illustrates how a center-control fork truck can be battered for virtually any daily schedule up to 24 hours without altering length or width. For

additional suggestions, write our nearest district office. Edison Storage Battery Division of Thomas A. Edison, Incorporated, West Orange, New Jersey.

Edison
 STEEL *Alkaline*
 BATTERIES

When writing Thomas A. Edison, Incorporated please mention Purchasing

BLACKOUT PAINT

■ **Carboxite Corporation** of Pittsburgh, Pa., announces a blackout coating for industrial plant windows and skylights that meets all of the authoritative specifications and recommended practices and features easy removal when danger no longer exists. This coating is *not* a paint but a smooth flowing liquid coating, manufactured from a pyrobitumen ore, especially refined and mixed with quick drying, volatile solvents and a secret ingredient which provides complete opacity and an absolutely gloss-free surface. No preference rating or priority is needed to obtain this as its main ingredients consist of non-essential

hydro-carbons which are not in demand for munitions or other war materials. Of particular interest is its ease of application and outstanding durability under even the most actively corrosive conditions, which permits its use anywhere.

It can be sprayed or brushed on quickly. Only one coat is required to assure complete protection against light penetration and drying is completed in 6 to 8 hours leaving a dead black, gloss-free coating that is as nearly totally non-reflective as is possible to obtain. The importance of the dull finish has been stressed in recent blackout recommendations to neutralize the effects of searchlights, aerial flares and other revealing

lights which may come into use. From the standpoint of durability, one coat will undoubtedly outlast the war itself as it is completely resistant to all corrosive atmospheres and liquids. Accelerated serviceability tests have shown no perceptible effects in the equivalent of many years of exposure to rain, wind, water seepage, ultra-violet, sulphur, acid and alkali fumes, salt water and salt air and numerous other destructive agents including soot, smoke and electrolytic action. Six or eight hours after application will not sag, peel, chip or check at temperatures ranging from -40° F. to 450° F. It is easily applied to glass and gives a close bond and uniform adherence which assures of one coat being sufficient. Application of the coating is so easy that any available workman could apply it rapidly.

Of great interest to many plants is the problem of removing blackout coatings when the danger period is over. This paint is readily soluble in gasoline, kerosene, naphtha or any light petroleum solvent, consequently will dissolve and wipe off of glass readily when so desired, without disturbing other painted surfaces. In locations where the use of volatile solvents such as gasoline involves a safety hazard, it is also readily removed with a putty knife or similar scraper as its coating remains flexible and is easily removed in a single layer without the use of any solvent or softening agent.

IF YOU ARE TRAINING VICTORY DEFENSE WORKERS



LOOK INTO THIS NEW STARRETT BOOK

The new Starrett Book for Student Machinists will help you teach trainees and beginners the fundamentals of modern metal working practice. Prepared in cooperation with leading industrial training experts, it provides essential information about tools, machines and metal working methods in clear, simple, shop language.

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WHAT EVERY TRAINEE SHOULD KNOW

(Partial list of contents of *The Starrett Book for Student Machinists*)

How to Read Working Drawings	Metal Cutting
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Facts about Fits	Tool-Making
Limits of Tolerance	Jigs and Fixtures
Bench Work	Grinding
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Machine Tools... Dial Indicators... General Tool Stock... Hand Tools... Metal Cutting Hand Tools... Steel Taps

AVAILABLE THROUGH YOUR REGULAR STARRETT TOOL DISTRIBUTOR

OBLIQUE PLATING BARREL



■ A new and improved oblique plating barrel drive has been developed by the Hanson-Van Winkle-Munning Company, Matawan, N. J. This Type 34 oblique barrel is now available in a new model, directly driven by a 1/6 hp. motorized worm gear reducer which is suitably mounted on the tank, ready for connection to the user's power lines. The arrangement readily permits the removal of the cylinder for rinsing, loading and unloading of the work.

This barrel can be furnished with a wooden tank, asphalt lined; or a steel tank, unlined or lined with 3/16" vulcanized rubber. The cylinder is all of bakelite construction with disc or button type contacts; or of hard rubber with disc type contact only. The panels in the bakelite cylinder are 1/8" thick; in the hard rubber cylinder, 1/4" thick. This unit will handle about 25 lbs. of work per batch.

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Far more inspiring than martial music or star-spangled speeches
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Proud boast of a nation and that nation's freemen, the very soil of our land echoes the slogan in the whispering song of ripening wheat, the murmuring of budding corn and in the swelling chorus of all growing things nature provides as food. If, as has been said, "Food will win the war and write the peace" it is in truth our greatest weapon. How imperative then that we unite in conserving and protecting the products of soil in all their manifold forms. This is defense work of the first order. To this cause we dedicate our hearts, our minds and our honest endeavors.



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FLUORESCENT DEVICES

■ A manual starter switch and three new lampholders, designed to simplify the use of fluorescent lamps in certain locations requiring special attention, have been announced by the General Electric appliance and merchandise department, Bridgeport, Conn.

A "Butt-on" fluorescent lampholder of a shallow, rotating-lock type, accommodates Mazda "F" 14-watt to 40-watt lamps. White in color, it is for use with commercial and industrial fixtures having illuminated ends. The small socket di-

mensions permit only minimum shadows on the translucent fixture ends. The device is only $\frac{1}{8}$ inches deep and $1\frac{1}{4}$ inches in diameter. It can be surface-mounted using screws from back tapped into inserts (95X168) or using screws through eyelet clearance (95X217). It is equipped with 18-inch stripped fixture wire leads.

A weatherproof lampholder for fluorescent use (95X178) is mounted on a flexible bronze bracket which makes lamp insertion easy and holds the lamp rigidly in place. This is designed for use on

theater marquees and with other outdoor lighting equipment. The lampholder is waterproof and is approved by Underwriters for outdoor application. It has 12-inch leads of No. 14 weatherproof fixture wire, and is available on order but not stocked.

A "Butt-on" lampholder for Mazda "F" lamps T5, 6, and 8-watt (95X276) is small, designed for instrument panel lights. It may be mounted either flush or surface on end plates. The mounting brackets can be adapted for special requirements. The body diameter of this device measures $\frac{3}{4}$ inch, the depth $\frac{1}{2}$ inch. Leads are 6-inch stripped fixture wire.

The manual starter switch for Mazda "F" lamps is a combination manual switch and fluorescent lamp starter for use with portable lamps having two 14-watt, 15-watt Mazda "F" lamps in series with resistance ballast, or with desk lamps of one- or two-lamp design, or with any single or two-lamp combination. The switch has a rotary-momentary contact start and positive "off" with line current open. The switch handle is of the black Textolite dial type, reading "Off-Start". After being held in start position for three to five seconds, the switch returns to running position by itself. The dimensions of the switch base include $1\frac{1}{8}$ inches diameter and $\frac{33}{64}$ inches enclosed depth. Leads are 5-inch stripped fixture wire, two black line and two red "start" and two white "start".

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The Bunting Brass & Bronze Company, Toledo, O. Warehouses in Principal Cities.

STABILOG CONTROLLER

■ When The Foxboro Company, Foxboro, Mass., introduced the Stabilog controller, it was featured as the first instrument providing full proportional control with automatic reset of the control point. Many thousands of in-



installations have since been made, in applications involving control of temperature, pressure, liquid level, or flow; and it is an impressive fact that in more than ten years of this field experience, no changes have been found necessary in the fundamental principles of operation. In introducing the new Model 30 Stabilog controller, now, the fact that the new features are principally refinements, for better appearance and still closer control, but that the Model 30 does not depart from the tested and proven Stabilog control principles, are emphasized.

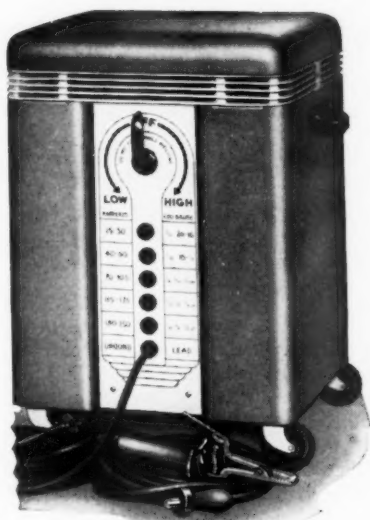
The Model 30 appears in the new universal rectangular case, which combines practical convenience with attractive ap-

When writing The Bunting Brass & Bronze Company please mention Purchasing

pearance. When panel-mounted, the instrument extends only $\frac{3}{4}$ inch from the panel surface. The door is recessed; hinges and hasps are flush with the door surface. A dual pressure indicator, replacing the customary two small gauges, is easily seen through a rectangular opening in the door. Interior illumination is readily provided when desired.

All operating adjustments are made from the front of the case, the adjusting mechanisms for change of control point, throttling range, and reset resistance being immediately accessible when the door is opened. But the entire operating mechanism is protected and concealed behind a removable plate. Unit construction simplifies replacement of the measuring system, changing the type of control, or any other major servicing of the mechanism that may ever be necessary.

ARC WELDER



■ **Suitable for all** types of industrial services, the a.c. arc welder, manufactured by Allen Electric and Equipment Co., Kalamazoo, Mich., is designed to give in 30 different steps, practically any welding current required between 15 and 250 amperes. The low heat ranges make it possible to weld very light gauge metal without danger of burning holes, while the high heats permit the welding of heavy parts.

The welder has passed the 8-hour burn-out test of the National Board of Fire Underwriters. It proves the machine's ability to be used all day and day in and day out at 250 amperes without any transformer trouble. It is constructed oversize and extra heavy, to meet the most rigorous of industrial requirements. It is equipped with swivel casters, is portable, easy to handle, and ready for work in any part of the shop, merely plug in and weld.

PAINT

■ **A line of five new paints**, designed to provide civilian markets with products to replace now unavailable aluminum paints, has been announced by American-Marietta Company, Chicago, Ill. Tailored for both new construction and maintenance applications, they may be applied by brushing or spraying.

Valdura Tank White has been introduced to replace aluminum paint in applications where it is desirable to cut evaporation losses and to reduce inside temperatures. With a reflectivity factor 10 to 15 per cent higher than aluminum paints, it is resistant to oil and water. Coverage is about 450 square feet to the gallon with brush or spray.

Valdura Metal Lead paint provides a fine protective, lead-colored metal coating for all metal surfaces, including new or old galvanized metal. Metallic lead provides a leafing action similar to that of aluminum, affording a coating highly resistant to acids and alkalis, and to fumes, rust and moisture. It will set in two to three hours, will dry in 10 hours, and resists temperatures up to 225 degrees F. Rated coverage is approximately 600 square feet of clean metal per gallon. It may be used as a general metal primer under any paint except those containing asphalt.

Two Valdura Defense Grays, available in light and neutral shades, are designed to provide low-cost effective pro-



A GOOD EXAMPLE OF SANITARY INDUSTRIAL PLANT WASHROOM

To insure adequate and sanitary washing facilities—to guard employee health against Dermatitis and lost man-days, progressive manufacturers for many years have equipped washrooms with Bradley multiple-person Washfountains in place of conventional "single-person" basins.

Bradleys provide the maximum in sanitation, 8 to 10 persons may wash simultaneously, each in clean running water with no danger of contamination.

Bradleys save space, water and installation time. One Washfountain requires only one set of piping connections—hot water,

cold water and drain, while for conventional "single-person" wash basins to serve the same number, 8 to 10 times as many piping connections are required.



8 to 10 persons wash simultaneously at a Bradley.

Bradley Washroom Consultants are ready to make washroom layout recommendations and Catalog 4010 will be mailed on request. BRADLEY WASH-FOUNTAIN CO., 2281 W. Michigan St., Milwaukee, Wis.

BRADLEY
Washfountains

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tection and long durability on exposed metal surfaces. Permanent elasticity is provided in the paint film, assuring years of rugged service on oil and gas tanks, iron fences, structural steel, water towers and power line towers where there is appreciable expansion and contraction due to temperature changes. Both colors have high gloss finishes, and are highly resistant to rain, sun, grime, smoke and rust. Coverage is 450 square feet per gallon.

Valdura Enamelized Yellow Metal Primer is designed for all types of metal surfaces, particularly where metal is subjected to extremely damp, wet and foggy conditions. It may be used under water when covered with one or

two coats of Defense Grays. Its light yellow color permits use of a single coat of paint to hide the primed surfaces. Coverage is 500 square feet to the gallon.

HIGH VISION FLUORESCENT LUMINAIRE

■ **To speed up** production in industrial plants, where extended light lines are desirable, a 40-watt fluorescent luminaire is announced by the Westinghouse Electric and Manufacturing Company.

Known as type FPS-40, the luminaire uses 2 or 3 40-watt fluorescent lamps per reflector and will provide lighting inten-

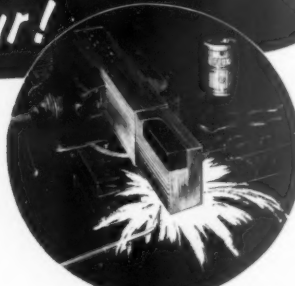
sities of from 30 to 100 footcandles with maximum diffusion, minimum glare and uniform distribution at ordinary spacing and mounting heights. It provides adequate visibility for close work such as reading precision micrometers, verniers, and other shop instruments.

Design of luminaire makes it possible to construct any length of strip desired from four simple and compact types. Channels provide a continuous wireway which may be mounted on conduit, messenger cable, twin-rod suspension or directly on the ceiling. All auxiliary equipment is mounted in the channel. The units have twin-ballasts with built-in compensators providing power factor of 90 per cent or over.

From Blueprint To "Tool-up" In Less Than 1 Hour!

Braze Your Own Carboloy Tools

... Get Them On Emergency Jobs **FAST!**



Emergency periods call for quick action. When a job must get under way fast—when you need Carboloy tools "yesterday"—why not braze your own Carboloy tools? ... It's a simple short cut that eliminates ordering time and avoids routine "hold ups" awaiting deliveries.

Many plants now keep a stock of Carboloy Standard Blanks in their tool crib ... ready, on a moment's notice, to make up a tool and get it on the job fast! ... less than an hour for most single-point, straight-shank tools!

Just three simple steps are necessary to do this in your tool room.

1. Preparing Recess in Shanks

To accommodate the Carboloy blank in your tool shank it is necessary to provide a recess in which the Carboloy Blank can be inserted. This is a simple operation that can be done on your regular tool room milling or grinding equipment.

2. Brazing Carboloy Blank to Shank

Brazing the Carboloy Blank to your shank requires less than 5 minutes on most straight-shank, single-point tools. To do this you simply need a torch, and a few inexpensive accessories: Silver solder, flux, carbon tetrachloride, etc.

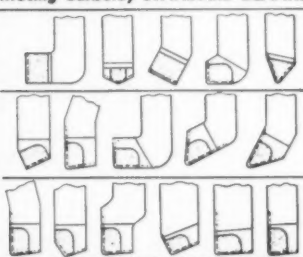
3. Grinding the Brazed Tool

Simple—fast—as easy as regrinding dull carbide tools, using the now-established, rapid grinding technique, and your regular carbide grinding equipment.

With these three simple steps you're prepared to meet emergency requirements immediately. Why wait—when you can get tools on the job **FAST!**—by this simple procedure?

A new 32-page Carboloy Tool Manual, No. GT-133, shows exactly how to do the job and also contains data essential for subsequent use and maintenance. This manual, with Carboloy Standard Tool and Blank Catalog, No. GT-140, listing Carboloy Standard Blanks—65 sizes, 2 styles, 3 grades—sent upon request.

A Few Typical Tools You Can Make ...Using Carboloy STANDARD BLANKS



CARBOLLOY STANDARD BLANKS ARE AVAILABLE IN 2 STYLES, 65 SIZES AND 3 GRADES

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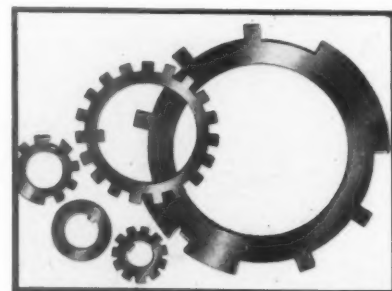
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CUSTOM MADE LOCK WASHERS



■ **Under the Defense Program** there has been quite a demand for special custom made lock washers, including thrust washers in various sheet alloys. Under their special die stamping process the Dayton Rogers Mfg. Co., Minneapolis, Minn., are able to produce 100 special custom made stamped either lock washers or thrust washers according to definite requirements at a comparative cost of 6 or 8 hand-made washers.

Their present capacity ranges in size from 1/2" to 12" in diameter of any sheet alloy that will lend itself to the conventional type of die stamping of sheet metal parts. This service is of considerable advantage to the machine tool trade, as well as other machinery equipment manufacturers.

All these lock washers and thrust washers are produced on a special compound die of their exclusive design. Representative samples may be had on request.

INSULATION

■ **Vulcanized fibre** surfaces on a laminated phenolic material insulation, is announced by N. S. Baer, Hillside, N. J. It is especially suited where there is an arcing condition. The vulcanized fibre quenches the arc without carbonizing or tracking and the phenol fibre gives the necessary rigidity and moisture resistant qualities. The material can be punched, sawed, drilled or tapped.

PERSONALITIES

in the NEWS

Charles R. Miller, Jr., formerly Director of Purchases, U. S. Steel Corporation of Delaware, has been elected Vice President in Charge of Purchases, and a member of the executive committee and board of directors, effective January 1, 1942. Mr. Miller, a native of Pittsburgh, has been associated with U. S. Steel subsidiaries for more than forty-four years, first entering the employ of the Carnegie Steel Company as an office boy in 1897. Subsequently he served as order clerk, bill clerk, and chief clerk in the purchasing department, and then as Purchasing Agent of the Carnegie Steel Company. On January 1, 1935, when the Carnegie-Illinois Steel Corporation was organized, he was appointed Purchasing Agent for the Pittsburgh district. He became Director of Purchases for the U. S. Steel Corporation of Delaware on August 15, 1940.

K. W. Jappe, Director of Purchases for the Hercules Powder Co., Wilmington, Del., has been elected chairman of the Finance Committee of the American Society of Mechanical Engineers.

Martin V. Kehoe, formerly Purchasing Agent of the Hall Mfg. Co., Cedar Rapids, Iowa, has retired from active business after more than forty years of service with that organization. Mr. Kehoe joined the staff of the J. S. Hall hardware store at Monticello, Iowa, in 1900. When the Hall Mfg. Co. was organized in 1908 he became secretary, coming to Cedar Rapids in 1919 when the company's plant was established in the latter city. In addition to his services as Purchasing Agent, Mr. Kehoe was appointed to the position of General Manager, Secretary and Treasurer in 1924 and served in that broad capacity until a few years ago. Ill health during the past year hastened his retirement.

Charles J. Coffman, formerly on the purchasing staff of Langendorf United Bakeries, Inc., San Francisco, has been appointed Assistant Purchasing Agent for Pacific Coast Aggregates, Inc., of the same city.

Albion Bindley, formerly Purchasing Agent of the Pittsburgh Steel Co., has been elected Executive Vice President of that organization.

Roy F. Stiles, General Purchasing Agent of the Stewart-Warner Corp., Chicago, addressed a recent meeting of the American Management Association on "Operating a Priorities Department."

R. J. Malkmus, Purchasing Agent of Hanson-Van Winkle, Munning Co., Matawan, N. J., has been elected Vice

President of the Matawan Bank. He has been on the board of directors for several years past.

Frank A. Bloom, City Treasurer of Burlingame, Cal., has been named Purchasing Agent for the defense organizations of San Mateo County.

W. R. Armstrong has been appointed to the newly created position of City Purchasing Agent at Amarillo, Texas. Mr. Armstrong has had long experience in the construction industry, and was formerly buyer for the George Parr Contracting Co. and the Amarillo Lumber Co.

Carlton A. Kelley, retired Purchasing Agent for the California Electric Power Co. at Riverside, Cal., and associated during 1941 with the Purchasing Division of O.P.M. at Washington, has been named secretary of the Riverside Defense Council. A capable and experienced executive, Mr. Kelley is further

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Bronze on Steel
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New Bearing Metal Adapted to Many Other Uses



PERMANENT BOND

Examine a section of *Pre-Cast Bearing BRONZE ON STEEL* closely and see how permanently the bronze is bonded to the steel.

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the complete story on *Pre-Cast Bearing BRONZE ON STEEL* . . . it's FREE.

While *Pre-Cast Bearing BRONZE ON STEEL* was developed primarily for sleeve bushings and bearings, it also fills many other important industrial uses. It is ideal for applications requiring a flat bearing surface such as plates, washers, etc. In applications where the movement is slow or where lubrication is uncertain, it is often advisable to use the graphited bronze type.

Some manufacturers prefer to secure *Pre-Cast Bearing BRONZE ON STEEL* in rolls and do their own stamping and forming. In such cases, we can furnish it in coils up to 400 feet in length. The maximum width of the strip is 5½ inches.



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Sleeve BEARING HEADQUARTERS

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● No one can predict where treachery may attempt to strike, but industry can and will set up protections. Logically the first barrier should be at all property lines. Two important factors favor Page Industrial Fence. The first woven wire fence was Page Fence, and for 59 years its makers have held a forefront position in major developments. Page also originated localized experience and responsibility in fence engineering and erecting. When you specify Page Fence you deal with a nearby business man—one of 102 technically-trained, long-experienced firms which own their own plants and comprise the **PAGE FENCE ASSOCIATION**, Headquarters: Monessen, Pennsylvania.

VICTORY FIRST
At the Page mills, men, machines and materials are on an all-out schedule for production of fence to protect plants working on Government orders.

See ACCO advertisement in this issue, page 96

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MATERIALS WILL WIN THE WAR!

Use the Conservation Chart in this issue which shows 100 ways in which the industrial plant, large or small, can save for Victory.

qualified for the defense post by his distinguished service as Adjutant General of the Colorado National Guard. He is a past president of the N.A.P.A.

Salvatore Bontempo, City Purchasing Agent at Newark, N. J., has been appointed to the board of tire rationing officers in that city.

George L. Meyer, Jr., formerly Purchasing Agent for the Stewart-Warner Corp., Chicago, has been elected Vice President of that organization. Mr. Meyer has been associated with the company since the year of its founding, in 1907, organized its purchasing department and directed its buying until 1939, when he was made manager of the Stewart Die Casting Company, a subsidiary. In his new position he will continue to have charge of that division. He is a past president of the Chicago Purchasing Agents Association, and has served as District Vice President of N.A.P.A.

Benedict Van Voorhis, Division Purchasing Agent of E. I. du Pont de Nemours & Co., Plastics Department, Arlington, N. J., has been named head of the Military Division, in the Purchasing Department of the Remington Arms Co., Bridgeport, Conn.

John Conner, formerly Purchasing Agent of the National Equipment Co., Springfield, Mass., and later with the Van Norman Machine Tool Co., which acquired National some years ago, has joined the staff of the Savage Arms Co. in Chicopee, Mass. Mr. Conner is a past president of the Western Massachusetts Association, and served as District Vice President of the N.A.P.A.

Frank W. Rowe, General Purchasing Agent for the Johns-Manville Co., New York, from 1914 to 1937, and actively serving as Purchasing Consultant for the company since that time, has retired from active business. Mr. Rowe was one of the founders of the New York Association and of the N.A.P.A. He served as president of the New York group in 1919-1920, and at the first convention of the N.A.P.A., was elected to the office of first vice president of the national organization.

G. M. Henderson has been appointed Assistant to the General Purchasing Agent of the American Brake Shoe & Foundry Co., New York City. He succeeds the late W. E. Sault.

T. B. Parsons, Purchasing Agent for the Vancouver, Wash., plant of the Aluminum Company of America, has

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been named construction supervisor of the new government plant at Troutdale, Oregon. R. W. Anderson, formerly Assistant Purchasing Agent at the Vancouver plant, will be Purchasing Agent at the company's new Spokane, Wash., plant.

M. B. Houston, formerly Purchasing Agent for the Crown Zellerbach Co., and for the past several years associated with Rayonier, Inc., Seattle, has been elected vice president of the latter company.

Lee C. Case, Purchasing Agent of the Wilcox Rich Division, Eaton Mfg. Co., Saginaw, Mich., has been named Production Manager. The new appointment was part of a new alignment of duties to accelerate the manufacture of aircraft engine parts at this plant.

Herbert Whiting, Purchasing Agent of the Marshfield, Oregon, plant of the Evans Products Company, has been transferred to Portland, where he heads a new purchasing office for the entire western division of the Evans interests, including the Marshfield and Lebanon plants and other holdings.

Robert W. Alderson has been appointed Purchasing Agent of the American Tissue Mills, Holyoke, Mass., taking over duties which have previously been handled by President B. F. Perkins. Mr. Alderson was formerly comptroller of the company.

J. M. Cathcart, Jr., has been named Purchasing Agent of the Courtenay Mfg. Co., Newry, S. C. Prior to his recent advancement, he was superintendent of the plant.

George E. Price, Jr., Purchasing Agent of the Goodyear Tire & Rubber Co., Akron, and past president of the N.A.P.A., addressed a meeting of the Sales Managers Bureau, St. Louis Chamber of Commerce, January 9th.

CORRECTION

This column, in the December issue, announced the retirement of T. J. Kearns as Assistant Purchasing Agent of the DuPont Company, Wilmington, Del., after half a century of continuous service. That announcement was premature. The 50-year service record was correctly reported, and was duly commemorated by the company and by Mr. Kearns' associates, but thanks to an exceptionally early start in the business world this veteran buyer has not yet reached the retirement age of sixty-five and is still going strong, in active purchasing work. We regret the error, and salute a service record which is even more remarkable than we had realized.



• Because they never give, these **ARM-STRONG Heavy Duty "C" Clamps** are safely used, day after day, to carry these gigantic steel automobile body dies where the slightest spread or spring or the least slippage of the screw would result in disaster.

• Here is dependable quality that you too can rely on. Look for the **Arm-and-Hammer Trade Mark**. It guarantees a better clamp.

ARMSTRONG

Drop Forged "C" Clamps

HEAVY DUTY "C" CLAMPS

Drop Forged from special steel, heat treated to give extra strength and stiffness. These stronger clamps have long hubs and alloy steel screws. Capacities from 3/4" to 12 1/2".

MEDIUM SERVICE "C" CLAMPS

A strong clamp adapted to general use that gives maximum holding power consistent with convenient weight. Drop Forged, heat treated body. Special steel screw with free acting swivel. Capacities from 2" to 18".

LIGHT SERVICE "C" CLAMPS

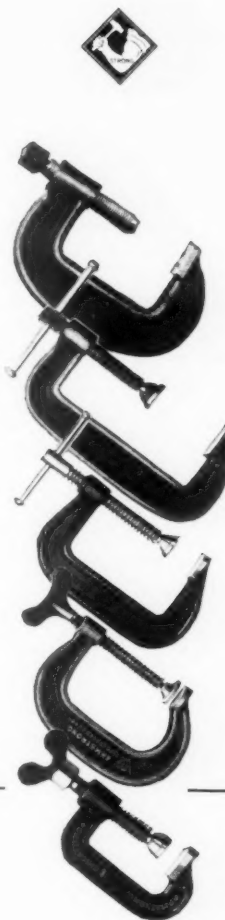
A light, strong clamp, fast operating. Ideal for general shop use, for assembling, holding airplanes, automobiles, boats, etc., Forged, heat treated body, special steel screw. Capacities 2" to 12".

DEEP THROAT "C" CLAMP

This clamp is designed with an extra deep throat to give maximum clearance required by body builders, woodworkers, welders, etc.

TOOL MAKERS' CLAMPS

Drop Forged and heat treated to increase toughness. Screws are also drop forged, have square neck to take wrench and come plain or with swivel end. Capacities 2" to 12".



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WIREGRIP belt hooks have the patented blue aligning card that holds hooks firmly in position, prevents them from loosening, prevents hook loss from handling, prevents waste of short ends. Every **WIREGRIP** Hook to the last one can be used.

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ANSWER: If you also include soldiers, marines, and the 17 workers required to equip every single armed man . . . the answer is: All the Manila rope this country can produce.

REMEMBER PEARL HARBOR?

That infamous attack which started War in the Pacific also interrupted normal trade movements of one of Uncle Sam's vital materials: Manila fiber from the Philippines.

The Government has wisely diverted all existing stocks of Manila fiber to production of rope for war, leaving civilian needs to be filled by rope made from other fibers.

PLYMOUTH WARTIME ROPE has been made to fill civilian orders. Composed of the finest sisalana fibers available, it is approximately 80% as strong as our famous Plymouth Ship Brand Manila.

WARTIME Rope, too, must be conserved to the best of our ability. There's no rope to waste, of any kind.

MAKE IT LAST LONGER. If every piece of rope used in 1942 were made to last 10% longer through proper care and handling, the country's stockpile would be increased by 15,000,000 pounds.

HERE'S ONE BIG WAY YOU CAN HELP OUR WAR EFFORT: Plant Engineers, Superintendents, Foremen, and all other "bosses" can instruct their men to take better care of *all rope*. A few simple rules, if carried out, are sufficient.

FOR INSTANCE, rope should be stored in a dry, unheated place with free air circulation, to prevent dry rot. Rope loads should be estimated on the Plymouth Tensile Strength Table to prevent overloading and breakage. This is very important now, since the Wartime brand has approximately 80% the tensile strength of Plymouth Manila.

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HANDLING BUSINESS RECORDS IN TODAY'S EMERGENCY

By E. L. CADY

FILING Cabinets, transfer cases and other records storage equipment cannot be bought today as readily as in former years. There are a few of various types still on the market, and the production of limited lots of some types goes on. But in business after business, records are accumulating faster than the ability to house them can be extended.

Under such circumstances the instinct is to get rid of present records to make way for the new ones and to keep as few of the new ones as practical. But there are several reasons for preserving records and keeping them available.

One reason is that no matter how long the war may last or how severe it may become, the oncoming peace will be more like the past peace than like

the war period, and the records will be needed for peace operations. Another reason is that the government may want to get at records at any time.

Probable government researches are the main reasons for keeping records alive. And these researches may take several forms, touching on all departments and phases of business.

The most general immediate government delving, is in regard to inventories, the ratios of inventories to production lots, and other matters pertaining to raw materials allotment and control. And this may need extreme fluidity in records, for the depth to which the government will investigate is not known. Some questions may be answered from the ledgers, others by "sampling the files"—tabulating the data for all cus-

tomers found under the letters "A" and "N" in the files for example—while other questions may need full research into all files.

Obvious reason for inventories investigations is to secure compliance with wartime regulations. In addition, the government may find out the minimum inventories with which industries may be kept operating without either experiencing distress or holding unnecessary reserves, the possibilities of secondary materials and substitutes as relief for shortages, the opportunities for nation-wide integration of salvage methods, and other matters which will promote defense and help business to go on with least damage and stress. More dramatic possibilities are that inventories research may find hidden stocks

CLASSIFY YOUR RECORDS

1. **Vital Records.** Deeds, charters, franchises, stock ledgers and transfer records, basic journals and ledgers, patent and engineering documents, tax returns, important contracts. *Permanent, fire-proof and tamper-proof storage.*
2. **Important Records.** Operating records, reports, statistical studies, cost data, important correspondence, minor contracts. *Work out schedule for preserving records for a specific period—3 to 7 years—after which they may be destroyed or abstracted for permanent storage.*
3. **Useful Records.** Routine correspondence, current operating records, catalog files, material whose loss might create temporary inconvenience but which can be reproduced from basic records. *Availability for quick reference is the first consideration. Review periodically to keep at practical minimum.*
4. **Temporary Records.** Day-to-day records, memoranda, intra-company correspondence which serves its purpose and has no permanent value, duplicate forms. *Destroy promptly after current use is served, to conserve filing space.*



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it matter what you
put it on?*



How about the foundation on which you place your important records, accounts, office and factory forms and correspondence? Is it adequate for the purpose, designed to do its job properly, efficiently and economically?

Paper is an inexpensive but extremely important part of your record keeping, accounting and correspondence systems. Depending upon whether it is wisely or unwisely chosen, it can save or waste the time of your important executives, help or hinder the operation of your well-paid clerical staff and expensive office

equipment or truly or falsely present an impression of your business integrity and ability.

The complete Weston line of cotton fibre content ledger, index, bond and machine accounting papers is backed by more than 75 years of specialization and adherence to a standard of quality and craftsmanship that is recognized wherever paper is sold or used. Your printer or paper supplier will gladly assist you in selecting the Weston papers that will give you more in economy, efficiency and satisfactory performance.

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BYRON WESTON COMPANY, Dalton, Mass., Dept. H

IF IT'S WORTH KEEPING, KEEP IT ON A

WESTON *paper*

Makers of **LEDGERS**: BYRON WESTON CO. LINEN RECORD (Extra No. 1, 100% New White Cotton and Linen Clippings) • DEFIANCE LEDGER (100% Cotton Fibre Content) • WAVERLY LEDGER (85%) • CENTENNIAL LEDGER (75%) • WINCHESTER LEDGER (50%) • BLACKSTONE LEDGER (25%) • **MACHINE ACCOUNTING**: TYPACOUNT LEDGER (85%) • WESTON'S MACHINE POSTING LEDGER (50%) • DEFIANCE INDEX (100%) • WESTON'S MACHINE POSTING INDEX (50%) • WINCHESTER INDEX (50%) • **BONDS**: WESTON'S BOND (Extra No. 1, 100%) • DEFIANCE BOND (100%) • HOLMESDALE BOND (75%) • WINCHESTER BOND (50%) • BLACKSTONE BOND (25%)

which Axis nationals are keeping frozen without the factories which house those stocks realizing what is going on.

Reasons for past changes in prices may be asked by the price control authorities, and the answers to such questions must be substantiated by records. Mileages travelled by salesmen, and the reasons for those mileages, may have their effects upon tire and car repair parts allotments. Public relations, industrial relations, man rating records, machine tool outputs and the production increases achieved by special tools, are other matters which may come under scrutiny.

One factor which will keep records liquid, is the fact that no one knows what year the government may pick as the "control year"—the year which is used as a yardstick in measuring present conditions—for any investigation. In the order P-100 which controls maintenance supplies inventories, 1940 has been used, with the majority of such inventories limited to 110% of those for that year. In other matters other years may be found to be the periods of greatest significance. So long as this matter is in any doubt, files for many years back must be held ready.

Keep Records in Minimum Space

Keeping records available without finding additional filing equipment, requires planning.

One thing to do, is to review the contents of present files and find out which papers are significant. The sales office of a belting manufacturer reviewed its files and found that nine papers out of ten could be retired to storage or even destroyed without losing any clarity of records. In one instance a folder packed an inch deep with copies of letters, etc., could be reduced to one report which covered the call on which the customer first was secured, plus a few copies of orders, thus leaving only the thinnest of folders. A few notes were included in the file, to show the amount of sales effort needed to hold the account in line.

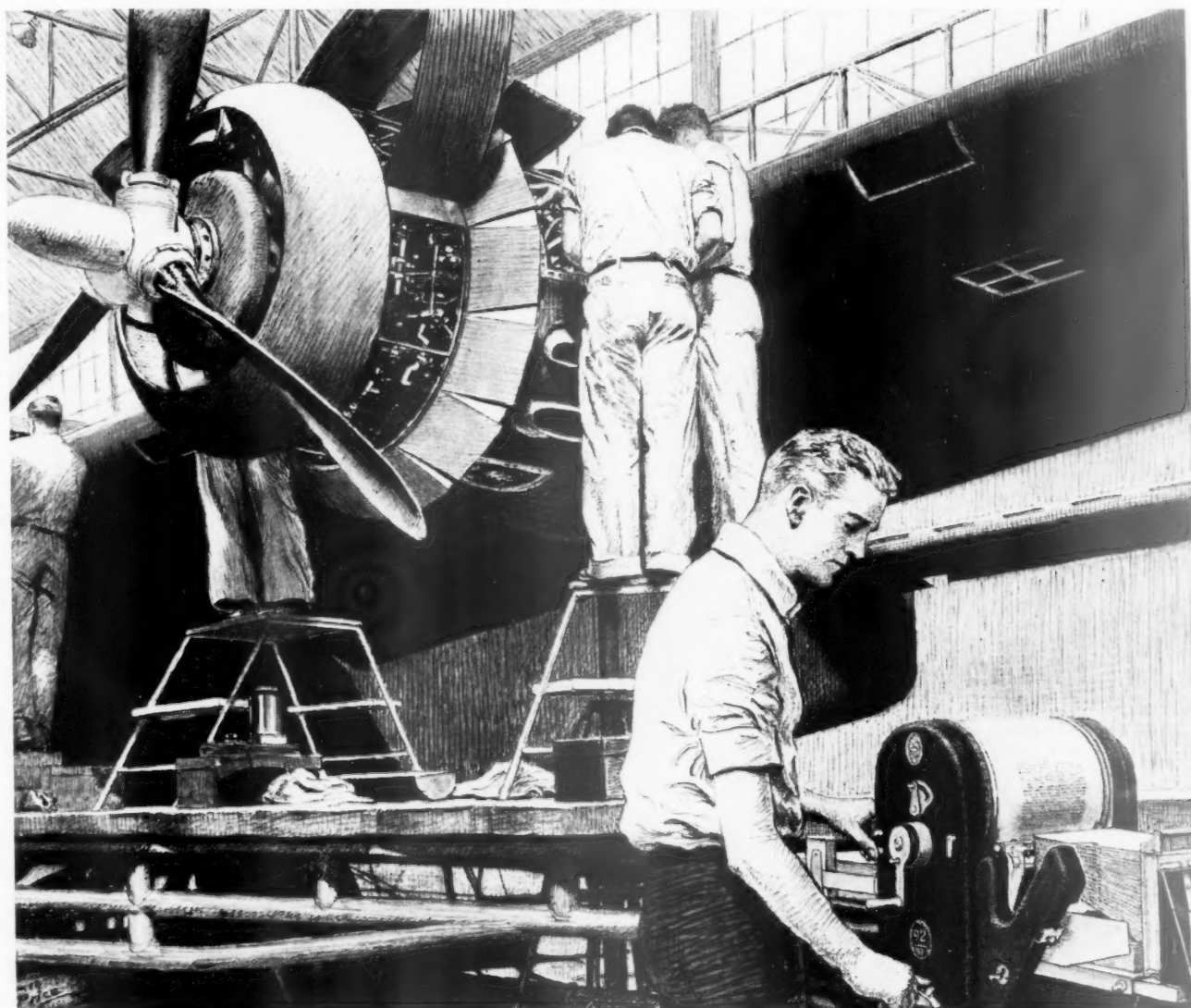
Photographic reproductions of records on microfilm is a resource too little used; 35 mm. films shown one at a time through a projector, are actually quicker to read successively than are letter carbons picked up from a file. And the contents of room fulls of files can be stored on such films within a few cubic feet of space.

Central files rooms with responsible individuals in charge, are a simple way to keep useless papers out of the cabinets while having all records quickly available. But central files systems are running into difficulties. One difficulty is the scarcity of properly trained personnel to manage such files. Another is the two or three shift operations of offices; each shift blames the others when files become mixed or papers are lost. A third trouble is the increasingly confidential nature of many papers. And many a cleverly worked out filing method is too slow for modern needs although adequate for 1941.

Color codes are solving some central

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Under the wings of production



"Bomber Production Line," (Consolidated Aircraft Corp., San Diego), a drawing by Norman Price



It takes 30,000 parts to build a bomber — not counting rivets, nuts and bolts actually by the million . . . These 30,000 parts are built into 650 units . . . and these 650 units become 32 sub-assemblies—wing, fuselage, tail surfaces, rudders.

As the production lines roll, those parts, units and assemblies must move . . . must travel through fabrication to final assembly inspection in exact order and sequence.

Controls that keep lines rolling . . . that keep those parts arriving in the right place at the right time . . . are thousands of tags, called "*tote tickets*." Producing "*tote tickets*"—to

guide the whole system and keep it running smoothly—is the responsibility placed upon the Mimeograph duplicator and supplies.

Mimeograph equipment frees executives and employees alike from the burdens of paper work, thereby increases their productive time. It reduces chances for error, cuts losses caused by waste and inefficiency. It

helps gear up industry to meet the needs of a geared-up America.

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8. File-size Sample Books. (a) Hammermill Bond, (b) Duplicator, (c) Mimeo-Bond. Quick way to choose right color, finish and weight of paper for business writing.

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PUR-FE

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files troubles. Specially colored cards, or even colors painted on the fronts of whole cabinets, tell which files may be used by the veteran day shift but not by the less trained night shift of file clerks, which files must positively be saved in case of fire or of air raid, and which apply to individual departments.

The increased need for tamper-proofing is leading to taking some records from central files rooms and keeping them in private offices which can be locked at night, but also is taking records from private offices and from engineering offices, etc., and causing them to be kept in central files departments where there are burglar and fire resistant vaults.

Portable Files

Taking records from places of safe keeping to places of use, is leading to extended use of transfer cases and other readily portable filing cabinets so whole file drawers can be moved intact. The crowded conditions of engineering departments also causes filing cabinets to be moved from them, with whole files of blue prints and records taken back to them whenever needed. Transfer cases are stackable and can be locked together both vertically and horizontally, which feature helps in transporting them. Many types of records cases are mounted upon casters so transportation is easy; other types are strong enough so with a little reinforcement they can be so mounted. But the usual method of transportation is to carry transfer cases by hand or on flat trucks.

With many plants having to find additional floor space in buildings remote from the main offices, and with many others establishing branches in distant cities, the transportation of essential records from plant to plant is becoming a problem. Duplications of records so each plant can have copies, overloads the filing facilities. But transportation is accomplished in cases which can be shipped out full and returned knocked down.

All transporting of records involves problems of tamper-proofing. Many filing cases have individual locks, and it is easy to apply locks and even seals to others so that no one but the supervisors of the central files and of the departments using those cases can open them.

Maintenance of Equipment

Many filing cases, now broken or damaged and therefore retired to storage or other secondary use, can be restored to full time service by making simple repairs. Such files are to be found tucked away in all sorts of odd corners, for in the past is usually was cheaper to buy a new file than to repair an old one.

The ills to which filing cabinets are heir, are breakage of parts, swaying, sagging, buckling and rusting. Many cases can be repaired by simple welding operations; many others merely need reinforcing with wooden or metal strips,

Dear General Burbank: I am writing to give you an account of my start in the business of making paper, since you asked me to so report when I left Worcester more than a year ago. On my way westward I called at Springfield, but dismissed it as a location for the Ames mill seems adequate to the needs of that community. So I rode on, looking for a site where land was cheap, water plentiful for power and pure for cleaning the rags and preparing the cotton and linen fibres. Also, where the surrounding region would produce a supply of rags and promise a market for the paper to be made from them. This place I found in Dalton, a community of about a thousand souls, most of them engaged in farming. On a fourteen-acre tract of land, which I bought for \$194, I have erected a one-vat mill and am now operating it with the help of an engineer, a vatman and coucher, and a layboy. We are making about twenty posts of paper a day. A sheet of our own foolscap conveys these words to you.

The postriders bring in a fair supply of rags from the housewives, for which I pay cash. I find a ready market for my paper here, and in our shire town of Pittsfield, where an increasing amount of it is used in printing the Pittsfield Sun. Phineas Allen, the editor, and I do not agree in politics, but I am still glad to have his custom. In fact he presses me to cheapen and quicken my process so that he may have more paper, but to this demand I turn a deaf ear, for I am determined to make only the best, no matter how much time it takes, and to build here a business that may endure.

For this determination, I owe much to my brother Stephen who taught me how to make paper in his mill at Newton Lower Falls, and to you, who perfected my training and confirmed my natural inclination to count quality the sole measure of manufacture.

With my respects and good wishes for the success of your enterprise and the state of your health, I am

Your friend,

ZENAS CRANE

Dalton, Massachusetts

February 1, 1802

NOW—as then—Crane adheres to quality as the sole measure of manufacture and by modern methods, and the accumulated experience and skill of five generations, converts cotton and linen fibres into enduring, distinctive papers for letters, documents of importance and record, and tokens of value, such as the United States Defense Bonds you are now buying in aid of your country and that all men may be free.



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with repainting to restore their eye appeal.

But the principal source for additional filing cases, other than buying the ones still available on the open market, must be to recover them from present unnecessary uses. And the principal need here is the elimination of careless thinking. The habit of dividing all records between those which go to the waste basket and those which are filed, is all too easy.

Classifying Records

Records should be refined year by year rather than merely "kept." Or perhaps, in any one company, some other method than the annual period one may be better.

In a large electrical goods manufacturing company, all records of more than one year's standing are divided into "Use" and "Historical" categories.

The papers needed to trace the relations with a customer would, for example, go into the "Use" category.

Into the "Historical" files go papers needed to defend law suits if any are brought against the company, history of the company for future advertising efforts, histories of trials and errors by which processes were developed, developments of patents, personal histories of top executives and other obituary material, progress of public relations and of industrial relations, and developments of relations with materials suppliers.

The words "Use" and "Historical" are employed only by the chief filing clerk; they really describe the difference between records which may be wanted piecemeal, and those which will be required *in toto* if at all. By dividing papers in this way, material which applies to neither category can be eliminated and much space saved.

A printing house specializing on advertising, created a single files room devoted to all of the ideas which any of its customers and prospects had liked, plus examples of the materials used by big advertisers in all fields. No papers can be taken from this room, and a single clerk is responsible for all of them. The company's salesmen come to this room instead of going to the correspondence files to find out what to offer each prospect. As a result, the correspondence files are in much better order and half of their bulk has been eliminated. Furthermore, the salesmen are offering more and better ideas.

A machinery manufacturer refines its files each time a new model is brought out. Correspondence regarding the old model is sifted for essential data, most papers discarded, and the "meat" retired to the historical files. In this way space is saved and thinking is kept current.

Plans to Fit the Need

A maker and seller of wide varieties of factory supplies, divided its files geographically in accordance with the territories of its salesmen. Any salesman then was privileged to go into his own files at will so long as he removed whole folders to take to his desk and left all replacing to the file clerk—these restrictions prevented the mixing of the files. At first this seemed to complicate the filing and to lead to the use of additional filing cases, as the "XYZ" ends of territory files would slop over into the ends of drawers and leave the remainders of those drawers empty, etc. But with time it was found that files could be refined in accordance with individual territory needs and that old papers could be retired to storage much earlier than had been thought practical when all files were in a single alphabetical sequence, and therefore that the system actually conserved space in the live files room. In addition, the time of salesmen and of file clerks was conserved.

All such systems merely add up to the fact that filing cabinet space can be conserved and files can be made more useful by thinking out a filing system which peculiarly fits an individual business. There is room for far more ingenuity in devising filing systems and in buying such equipment as is available to fit those systems.

In a style goods house, the probability of repeated cycles of present styles is respected, and all style data are sealed in water and moisture proof cellulose acetate envelopes so they will be preserved at their best for the future. In the storage room of a large manufacturer the trans-

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You want a letterhead that says the same of *you* and *your* business. A letter written on STRATHMORE BOND, or on STRATHMORE WRITING, costs less than 1% more than a letter written on the cheapest paper you might buy. And on STRATHMORE PARCHMENT, or STRATHMORE SCRIPT, as fine papers as can be made, a letter costs only 2.9% more. Such plus value, for so little cost difference, is sound business economy.

OUR PART IN THE WAR PROGRAM: Strathmore is devoting an important portion of its capacity to the production of papers for communications, records, blue prints, charts, maps and other uses which are essential to the preparation and use of war materials.

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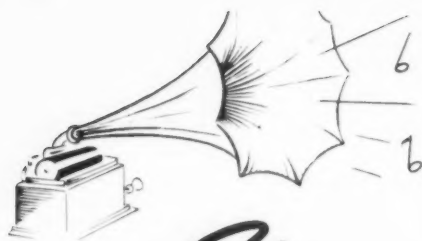
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fer cases were stacked to the ceiling as is usual, but the clerk in charge kept records of the numbers of times each was opened, and moved the most used drawers to the most accessible levels, thus saving ladder climbings and general exertion.

The filing cases of the future will find better filing systems to fill them.

PLANNING FOR FLUORESCENT LIGHTING MAINTENANCE

By E. W. BEGGS

Westinghouse Lamp Division

Although fluorescent lamps have an extremely long average life, they, nevertheless, wear out and eventually burn out or fail in service. When this time comes, the old lamp must be replaced by a new one. The fixtures should be so designed and made that lamps can be easily replaced and the location of the fixtures should be chosen to provide for ready access to them for maintenance.

It is impossible to predict when each individual lamp will burn out, but it is quite possible to predict the number of lamps that will fail in any given group of lamps used over a definite period of time, if the conditions are known and particularly if the group is quite large. Lamp life expectancy curves which are similar to actuarial data for humans are

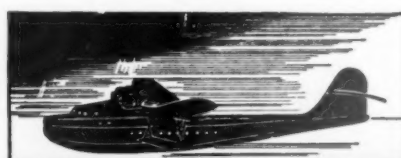
used, and with them a maintenance program can be developed that will provide the maximum satisfaction at the minimum cost.

In developing such a program the lamp life expectancy should be divided into two parts. The first part is an analysis of the group of lamps installed when the fixtures were first put into operation, and the second part is an analysis of subsequent lampings.

Since the initial lamps are all new, few, if any, fail during the first few hundred hours of service. As the group of lamps ages, however, an increasing number will burn out with the rate of mortality greatest at or near the average life point. A few will remain in service for a considerable period of time. With the average run of fluorescent lamps, however, there is a fairly wide spread in life, and about half of the first lamping will fail in a period equal to about one-third the average life of the lamps.

The mortality curve follows the life cycle of the first or initial lamping only. From it the following conclusion may be drawn:

1. About half of the lamps will have burned out when the average life point is reached.
2. A few lamps will burn out quite early.
3. A few lamps will live far beyond the normal life expectancy of the group. (Note: The average of the group cannot be determined until these lamps have burned out.)



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4. Most of the lamps will burn out near the average life point.
5. The rate of failure varies widely, rising gradually to a peak at the average life point and then diminishing as new lamps are installed.

The approximate number of lamps per month or per year that will need to be replaced after the replacement curve levels out can be estimated by multiplying the number of outlets by the number of hours burned, and dividing by the rated lamp life. This is the formula that should ordinarily be used although deviation from this average replacement rate must be taken into account during the first few lampings.

The principal maintenance requirements for economical and dependable lighting are:

1. Provide means for access to the fixture for cleaning and relamping.
2. Use fixtures designed to provide for ready cleaning and relamping.
3. Provide in advance for the replacement of lamps that are to burn out. In this, it is generally best to consider first the replacement of the initial group of lamps and then to plan for the ultimate, less erratic, replacement rate of later groups.
4. Consider the relamping and maintenance requirements of the installation when choosing the size and type of lamp to use.
5. Where a fixture or group of fixtures is extremely difficult to service, use the group replacement plan.

The more common devices now in use to reach a lighting fixture are: ladder, movable platform, and lowering hanger. The choice is not always easy. Conditions will largely determine the best solution, but in theory a decision can be reached on the basis of cost computations. This is done by first establishing the labor cost of a single relamping with each device and then, based on the number of lamp renewals needed per year, determining the overhead cost of the equipment per renewal. The most economical is, of course, the one which shows the lowest combined cost of renewal labor plus overhead.

In general, it will be found that each device has an important place in the picture. Ordinarily, where very large numbers of units are to be serviced, the movable platform is the cheapest. Where there are a medium number of units, a ladder is least expensive. Where there are only a few, the lowering hanger is the most economical.

However, where a movable platform cannot conveniently be moved about on the floor to bring the maintenance man to the fixture, or where the design of the building makes the use of a ladder impracticable, the lowering hanger is not only the best but is often the only solution.

Fluorescent lighting equipment can occasionally be serviced from a catwalk designed especially for the purpose or, if the layout is carefully planned beforehand, they may be serviced from a truss



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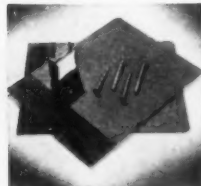
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or modified truss paralleling the fixture. Such a system would be unusual but, where possible, should be provided. Servicing of fluorescent lighting fixtures in the plant from a traveling crane requires a suitable safe operating platform which should be provided when the crane is installed.

A Typical Large Installation

Consider a defense plant with 10,000 40-watt lamps burning 20 hours a day and 25 days a month throughout the year. The relamping problems here are startling.

Substituting in the formula and computing the average number of replacements ultimately to be required, that is, 10,000 times 500 times 12 divided by 2500 equals 24,000 lamps to be replaced per year, or 2000 lamps per month after the first few relampings. That would be a sizable maintenance job, but the ultimate average replacement rate of 200 per month is only about half of the peak replacement rate that occurs at approximately 2500 hours and again at approximately 5000 hours.

The replacement curve reaches a peak of almost twice the average replacement rate after the lamps have burned about 2500 hours. This means that whereas 2000 per month or about 80 lamps per day would be relamped after the replacement curve levels out, over 130 lamps per day would need to be replaced during the first peak period which, in this instance, would occur at about the fifth month.

It is obvious that in installations involving large numbers of lamps such as are now being installed particularly in some of our new defense plants, the maintenance engineer must anticipate not only the average renewal rate but must lay his plans to handle the peak load when it comes.

When to Remove Lamp

It should be noted that the fluorescent lamp blinks on and off when it reaches the normal end of life. This blinking is caused by the high voltage that develops in the lamp when the emission material is worn away from both of its electrodes. This high voltage causes the glow switch, normally used, to switch the lamp alternately on and off. Blinking should not be permitted to continue for more than an hour or so or the starters will be destroyed and perhaps the ballast will be overheated and damaged. This means that all of the above requirements, ready access to the fixture; proper fixture design for quick relamping and maintenance planning are especially important; otherwise, the switch damage and possible ballast damage will represent extra operating cost of the lighting system.

Special cutout devices are now available to prevent the blinking from continuing beyond the danger point. The 85-watt, type RF, lamp now requires no starter. Therefore, in certain instances this becomes an advantage from the maintenance standpoint of sufficient im-

Evans' No. 1303

**Case Sealing Glue
Bonds 212,400 Sq. in.
per gallon**

Tested during actual working conditions, EVANS' No. 1303 case sealing glue, given a standard 50% dilution seals 212,400 square inches of rough corrugated board. This equals 738 cases sealed at the flaps both tops and bottoms size 6' by 12'. It goes more than three times as far as silicate of soda. Needs no expensive dispensing equipment. Only brush and bucket. Write department P for further details.

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Each with bath from \$3.00 up

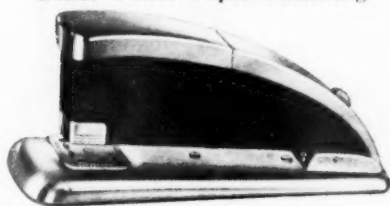
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They are economical, using standard size staples, built to last and guaranteed against defects.

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.....Write us a letter telling us where to send it, and we will send you one of the latest Model Star machines to try out. There's no obligation and the transaction won't cost you a cent!

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portance to be considered in planning the lighting installation.

Naturally, the fewer the lamps used and the longer the lamp life, the less will be the lamp replacement problem. This would lead to the use of larger sizes of fluorescent lamps to reduce relamping cost. The 85-watt lamp has a 3000-hour life and requires no starter so it is especially well suited for installations where relamping is difficult. The 100-watt lamp with its high output reduces the total number of units required for a given lighting job and is also well suited to large installations where lamp maintenance will represent a serious problem.

Group Replacement

Fluorescent lamps have, on occasion, been installed in fixtures with which relamping is extremely difficult and expensive. Some of the early fixtures, for example, required special tools and had to be partially dismantled in order to remove burned-out lamps and install the new ones. Also, some fixtures are located where access is difficult and where it is extremely costly to relamp and maintain the fixture. In such cases, group replacement, familiar to most lighting engineers in connection with incandescent lamps, should be used.

In practice, the simplest method is to replace all the lamps in the fixture or group of fixtures each time access is obtained. Those lamps which are not burned out may be used, if necessary, in other more accessible fixtures.

Group replacement may also be found to reduce the overall lighting cost if applied to an entire lighting system where access to the fixture is an appreciable cost item or where it is vital that a minimum number of lamps be inoperative at any one time. Operating under such a plan, a maintenance engineer would anticipate the approximate time of maximum replacement. For good results, the lamps should be replaced shortly before the period of peak mortality or peak replacement. In this case, the lamps that are removed before failure, can be used elsewhere or destroyed, depending upon conditions.

If good lighting at minimum cost requires easy and regular maintenance and preparations are made ahead of time for relamping, considering the peak as well as the average replacement rates, then long range lighting satisfaction will be assured.



OLD TOWN EXPANDS RESEARCH LABORATORY STAFF

Old Town Ribbon & Carbon Company, Inc., 750 Pacific Street, Brooklyn, New York, has announced the expansion of its Research Laboratory staff by the addition of two more graduate chemists.

In announcing this move, which brings the Old Town research staff to a total of six full time employees, four of whom are graduate chemists, A. W. Young, General Manager of Old Town, said: "The establishment of our own



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independent research laboratory has proved to be one of the wisest moves in the progressive program which has resulted in Old Town's position of leadership in the ribbon and carbon industry. Its tests and discoveries have resulted in many revolutionary ideas in both product and process improvement and have helped to raise the standards of the entire industry.

"The rapid strides which carbon paper and inked ribbons have made away from consideration of price alone, and toward emphasis on quality and performance, are due in no small measure to research achievements. But it should also be remembered that by adding to the efficiency of production methods and by discovering new and more practical materials, this department has helped to make possible a lowering of costs while at the same time raising the standards of quality.

"Many of the achievements of our research laboratory, for obvious reasons, cannot be disclosed. Among the outstanding accomplishments which the public already knows about, however, are the discovery of the method of preventing carbon paper curling; the development of multi-color ribbon-inking devices; the perfection of the Hi-Test Perfectwriter ribbon, one of the most unusual developments in Hektowriter ribbons; discovery of new principles in the manufacture of spirit carbons; a continuing search for better materials which would be readily available even

under war-time conditions, and a long-range view of the future. Even though some of the ideas on which we are now working may be difficult to put into commercial production until the war ends, research and process perfection will be carried on. Thus, when the time is appropriate, Old Town will be ready with product developments in ribbons and carbons for the public when war-time production can once again be swung over to peace-time goods.

"In the meantime, research continues to aid in the efficient and economical production of materials needed now for the administration of the national war program in government, in industry, and in business."

CONSERVATION HELPS OVERCOME MATERIAL SHORTAGES

"Make it last!" is the keynote of a recent warning message sent by the Tarrant County (Texas) Purchasing Agent to all county departments, urging them to conserve paper towels, paper cups, clips, pins, pen points, rubber bands, gummed labels, tires, and other equipment. Purchasing Agent Bell advised that old equipment should be used as long as it can hold together, and then it should be repaired, not replaced. He said in part:

"Everything we use is scarce, and we have had great difficulty in obtaining some of our supplies for some time

past. Typewriter ribbons are scarce; the material from which they are made is going into parachutes for our soldiers. The Government has stopped the manufacture of all rubber goods; this includes rubber bands."

A TRIBUTE TO EDISON

The nation pays tribute this month to one of its greatest men, Thomas Alva Edison, who, because of his inventive genius, has enabled the transportation industry and in fact all industries where handling of materials is important to make great strides and take their important places in speeding up handling of war supplies and essentials vital to victory.

In all, Edison made 1,150 inventions, for which we can and should be grateful. The electric light, electric power, fuses, switches, sockets, and storage batteries for use in train controls, trucks, portable lighting units, signal controls, car lighting, haulage locomotives.

In offices and plants we use others of his inventions such as the telephone transmitter, mimeograph machine, dictating machine, universal motors for office equipment and other products of his fertile brain.

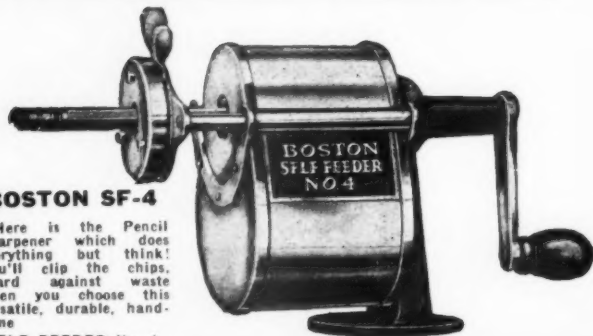
Yes, the transportation industry, in fact every industry, owes much to Edison. His name should not be forgotten, nor the blessings be bestowed upon us overlooked. The world should honor him on his birthday, February 11.



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Sharpeners in '42. Planes, ships
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Behind this line is a corps of highly trained research engineers with a vast array of up-to-the-minute laboratory equipment ready and able to work out the answers to new valve problems as they arise. These problems do arise with ever-increasing frequency as industrial advances take form. As each one is solved the answer takes its place in the Powell Line—and the Powell Research Engineering staff makes ready for the solution of the next one. Thus the Powell Line was built and thus it will continue to grow, in step with the inevitable progress of Industrial America.

The small valve shown is a $\frac{1}{8}$ " bar stock needle globe valve for instrument control and similar service. It is available in carbon steel, stainless steel and other alloys. The large valve is a 14" class 1500 lb. cast steel gate valve for operation on 920°F. steam at approximately 1500 lbs. working pressure. It is powered with Limitorque spring compensated motor operator. Between these extremes of size and design is the Powell Line.

The Wm. Powell Company
Cincinnati, Ohio



POWELL VALVES

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Among the ASSOCIATIONS

BOFFEY PRIZE WINNERS

Winners in the 1941 N.A.P.A. Students' Contest for the Boffey Awards have been announced as follows:

Group A—Undergraduate Students

Horace A. Karpf of New York City, Columbia University School of Business, "Elements of the Materials Control Function."

William C. Soule of Glen Ridge, N. J., Washington and Lee University, "Reciprocity as a Purchasing Policy."

Group B—Graduate Students

Allan Kirkham Smith of Merriam, Kansas, Stanford University Graduate School of Business, "The Allocation of Procurement Costs."

E. V. Dowden of Cleveland, Ohio, Harvard University Graduate School of Business Administration, "The Cost Aspects of Manufacture or Buy."

William R. Hilton of Trumbull, Conn., Harvard University Graduate School of Business Administration, "Subcontracting."

The committee in charge of the 1941 contest included Ralph D. Berry of the Davol Rubber Co., Providence, R. I.; C. C. Callowhill of the American Can Co., Hamilton, Canada; T. A. Corcoran of the *Courier-Journal and Louisville Times*, Louisville, Ky.; F. H. Hollister of Ingersoll-Rand Co., Painted Post, N. Y.; S. W. Mote of the University of Utah, Salt Lake City; and Gerald R. Smith of the Indiana Service Corp., Fort Wayne. The final judging committee was composed of Ralph D. Berry as chairman, Raymond D. Dixon of Brown & Sharpe Mfg. Co., and Francis G. Martineau of Brown University.

CONNECTICUT ASSOCIATION INSTALLS NEW OFFICERS

Officers for 1942 were installed at the January meeting of the Connecticut Purchasing Agents Association, held at the Hotel Elton, Waterbury, on the 27th. The new slate includes:

President, H. W. Schwartz of Robertson Paper Box Co., Montville.

1st Vice President, J. C. Andrews of American Hardware Corp., New Britain.

2nd Vice President, L. A. Fagan of Conn. State Department of Health, Hartford.

Secretary, F. A. Harvey of Ansonia O & C Co., Ansonia.

Treasurer, J. P. Camp of Phoenix Mutual Life Insurance Co., Hartford.

National Director, L. D. Muldoon of Jenkins Bros., Bridgeport.

Directors, E. S. Cobb of Sidney Blumenthal & Co., Shelton; H. F. Pease of Humason Mfg. Co., Forestville; P.

F. Jerome of Connecticut Power Co., New London; J. G. Gunther of Royal Typewriter Co., Hartford; F. J. Karolshak of H. L. Judd Mfg. Co., Wallingford; W. Saunders of Lux Clock Co., Waterbury; H. M. Greist of Greist Mfg. Co., New Haven; and C. Phillip of Bridgeport Metal Goods Co., Bridgeport.

Speaker of the evening was F. Albert Hayes of Boston, President of the N.A.P.A.

NATIONAL NIGHT AT NEW YORK

The January meeting of the New York Purchasing Agents Association was designated as "National Night", the speakers being officers of the N.A.P.A. F. Albert Hayes of the American Hide & Leather Co., Boston, President, spoke on "Two Victories." Roy C. Halberkern of the R. J. Reynolds Tobacco Co., Winston-Salem, N. C., District Vice President, took as his topic, "The Purchasing Agent—His Opportunity." George A. Renard, Executive Secretary, discussed national and economic affairs under the title, "From One P. A. to Another." Preceding the meeting, D. M. Meeker led an open discussion on procurement problems created by the war.

HAYES AT DAYTON

F. Albert Hayes of Boston, President of the N.A.P.A., was guest of honor and principal speaker at the January 8th meeting of the Dayton Purchasing Agents Association.

EXECUTIVE NIGHT MEETING IN ST. LOUIS

The annual Executive Night meeting and banquet of the St. Louis Purchasing Agents Association was held at the Statler Hotel, January 9th, with more than 400 in attendance. President John Higginson introduced the honor guests of the evening—members of the N.A.P.A. Executive Committee, in St. Louis for the mid-winter meeting over the weekend, and members of the N.A.P.A. Editors' Group, who held a conference in St. Louis on the 9th. Speakers of the evening were F. Albert Hayes of Boston, President of the N.A.P.A., "The National Association's Part in the Victory Program," and George A. Renard of New York, Executive Secretary of the N.A.P.A., "The Purchasing Agent in War—His Job." W. G. Smith, National Director, presented the commodity charts and market discussion. The concluding feature of the program was a rapid fire business forum in which two-

minute talks on "What Business Can Expect in 1942" were given by A. G. Drefs, Vice President of the McQuay-Norris Mfg. Co., Ward H. Goodloe, St. Louis District Manager of O.P.M., Stuart F. Heinritz, Editor of *Purchasing*, and George E. Price, Jr., Purchasing Agent of the Goodyear Tire & Rubber Co. and Chairman of the N.A.P.A. Business Survey Committee.

Following the meeting, there was an informal reception in honor of President Hayes, at the Coronado Hotel.

CHICAGO ASSOCIATION MEETINGS

The Purchasing Agents Association of Chicago celebrated its annual "Past Presidents' Night" with a dinner meeting at the Hotel Sherman, January 8th. Many of the men under whose leadership the association has moved forward during its 26-year history were present as honor guests at the speakers' table. Speakers of the evening included George A. Renard, Executive Secretary of the N.A.P.A., whose topic was "From One P.A. to Another," and District Vice President B. B. Countryman of St. Paul, who discussed district and national association affairs.

The February meeting, scheduled for the 19th, will be a joint purchasing-sales meeting in conjunction with the Chicago Sales Executives Club. It will feature an unrehearsed "Information, Please!" session at which four sales and four purchasing executives will voice their opinions on questions concerning the relationship between buyer and seller, making sales calls more effective, wartime buying and selling, and problems of the Victory program. Arrangements are in charge of V. C. Logan of Remington-Rand, Inc., representing the sales executives, and H. L. Brueggemann of the Acme Steel Co. for the Purchasing Agents.

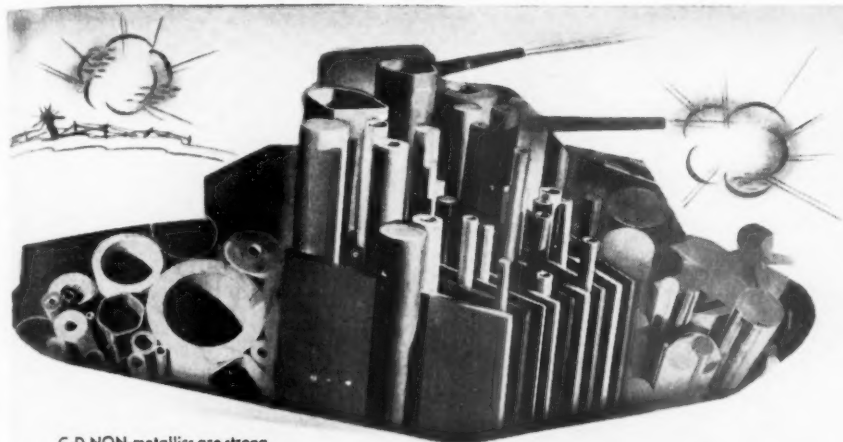
DETROIT ASSOCIATION

Captain Norman Rawson of Hamilton, Ont., addressed the January 21 meeting of the Detroit Purchasing Agents Association, at Webster Hall. Two special priority discussion meetings were also held, on the 14th and 28th.

TWIN CITY ASSOCIATION

James Russell Wiggins, Managing Editor of the *St. Paul Dispatch and Pioneer Press*, addressed the January meeting of the Twin City Association of Purchasing Agents on "The World Crisis." The meeting was held at the Hotel Radisson, Minneapolis.

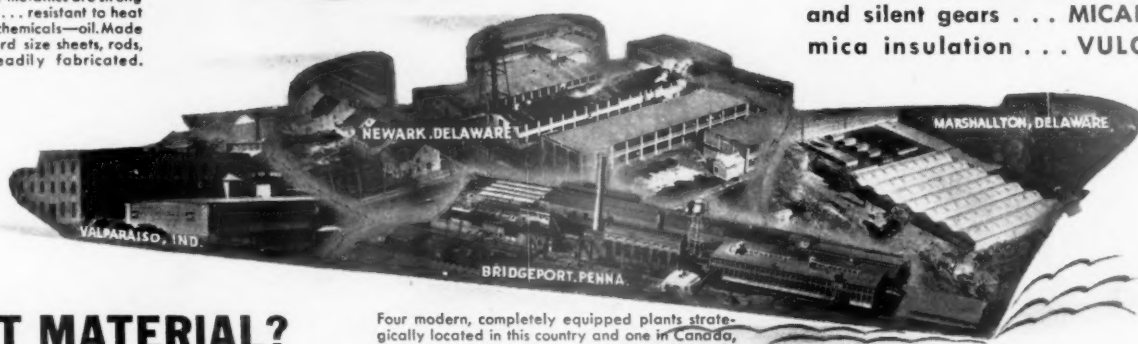
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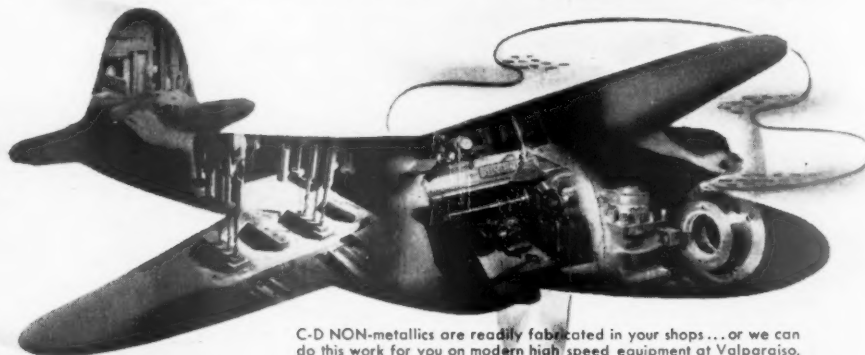
You can get help in your "What Material?" problems from the modern, completely equipped C-D Research Laboratory. Here you will benefit from a vast store of "know how" which we have accumulated during 46 years of helping customers solve "What Material?" problems.

Our recommendations will be unbiased because we make many types of NON-metallic materials.

Write today for booklet GF-27... it tabulates technical data and information on standard sizes and forms of all C-D NON-metallic materials.



Standard sheets, rods and tubes from service stocks in San Francisco; Valparaiso, Indiana; Newark, Delaware; Bridgeport, Penna.; and Toronto, Canada.



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COMMODITY MEETING AT BOSTON

The January meeting of the New England Purchasing Agents Association, held at Schrafft's on the 12th, was devoted to a comprehensive discussion of the commodity situation and outlook for 1942. Homer P. Griffin of the Dennison Mfg. Co., Chairman of the Commodity Committee, was in general charge of the program. Herbert N. McGill, President of the McGill Commodity Service set the background for the subject with an able analysis of the overall conditions and governing factors. Specific markets were then discussed by A. B. Secor, Chemicals; A. W. Munster, Fuel; H. E. Butterfield, Iron and Steel; L. E. Jones, Lumber; R. H. Merritt, Metals; M. K. Smith, Paper; H. Bremner, Cotton Textiles; H. S. Royce, Rubber; and W. B. Cummings. The meeting was preceded by an afternoon round table forum on priorities problems.

1 1 1

NEW ORLEANS MEETING

The January meeting of the New Orleans Purchasing Agents Association was held at the Jung Hotel, on the 14th. The program included showing of two sound motion pictures: "The Monroe Doctrine" and "America Learns to Fly."

1 1 1

SPRINGFIELD BUYERS GREET N.A.P.A. PRESIDENT

Fifty members and guests of the Springfield (Ohio) Purchasing Agents Association, met at the Shawnee Hotel, January 14th. Guest of honor and principal speaker of the evening was F. Albert Hayes of Boston, President of the N.A.P.A., whose address introduced a most interesting and valuable discussion of the Purchasing Agent's problems and responsibilities in today's emergency. President Moorehead of the Springfield Branch, presided, and Eli Jensen, National Director, acted as toastmaster.

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SAN FRANCISCO ACTIVITIES

The January dinner meeting of the Northern California Association of Purchasing Agents was devoted to "Priority Problems," with OPM officials from Washington to lead the discussion and answer questions of the members on specific points.

San Francisco luncheon meeting programs during the month included "Louis Colton Day," honoring Mr. Colton upon his retirement as chairman of the Association's Publication Committee after fourteen years of service in that capacity; a talk by an officer of H.M.S. Orion; Charles O. Bruce, patent attorney, "Goofy Gadgets—or, Inventors on the Loose"; Dr. George A. Pettitt, Assistant to the President, University of California, "Atom Smashing De Luxe," a description of the new cyclotron installed at the University.

Oakland luncheon meeting programs of the East Bay group included a talk

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by Francis C. Jones, Purchasing Agent, International Engineering Corp., on "The Philippine Islands," based on his experience of many years on the islands; "When and How to Recap Tires," by L. H. Ballantyne of the C. D. Rand Co., and a discussion of the tire rationing program by G. F. Oliver, President of the Oliver Tire Rubber Co.; "Consumer Credit," by R. A. Peterson, Vice President of the Bank of America; and "Chiselers and Their Weighs," by Edward K. Stowbridge, Sealer of Weights and Measures, County of Alameda.

The Association also participated in a luncheon meeting and priorities forum at the Palace Hotel on January 13th, presenting the following OPM officials from Washington: Mason Manghum, head of the Industrial Contact and Education Unit; A. L. Williams, chief of the Production Requirements Plan; James Hughes, Priorities Oil Coordinator; Jerome Low, Maintenance and Repair Order; John H. Martin, Assistant Director of Policy; and J. R. Stuart, Steel Warehousing Section. The discussion centered around the new Maintenance, Repairs and Operating Supplies Plan (P-100), the Production Requirements Plan (PD-25a), the recent Copper Order (M-9-c), and other recent OPM rulings.

OREGON BUYERS DISCUSS PRIORITIES

The monthly dinner meeting of the Oregon Purchasing Agents Association was held at the Mallory Hotel, January 12th. The program was devoted to an open forum discussion of priorities, with several of the members presenting the benefits of their experience and giving their explanation of recent changes in priority regulations.

BIRMINGHAM ASSOCIATION

The opening meeting of 1942, of the Purchasing Agents Association of Birmingham, was held at the Redmont Hotel on January 8th. T. Clyde Ulmer, local manager of Courts & Co., spoke on "Stock Brokerage as Affected by Economic Conditions."

JOINT MEETING AT PITTSBURGH

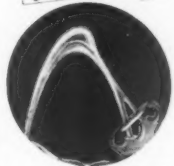
The January 20th meeting of the Pittsburgh Purchasing Agents Association was a joint session with the National Office Management Association, at the Hotel Pittsburgh. Dr. E. B. Roberts, Assistant to the Vice President, Westinghouse Electric & Mfg. Co., spoke on "Industrial Relations in the War Period."

ALBANY BUYERS HEAR ABOUT CONSERVATION

William Arnoldy, Secretary of the State Committee for the Conservation of Waste Material, addressed the January 22nd meeting of the Eastern New York Association of Purchasing Agents at the Ten Eyck Hotel, Albany. He outlined



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No longer can America brook delays. It's a time for ACTION! And Industry sets itself for all-out production! Do your men waste

time because of obsolete drinking water systems? Plant superintendents find Halsey Taylor Drinking Fountains help save their time, and, equally important, afford the utmost in sanitation. Get our latest catalog, showing complete line of fountains as well as ice and electric coolers. The Halsey W. Taylor Company, Warren, Ohio.



Halsey Taylor

Drinking Fountains

After we roll it— WHAT?

OUR interest in national defense is by no means limited to manufacturing the tremendous tonnage of Nickel Silver and Phosphor Bronze that we ship to priority holders. We want to help our customers to get the most out of these alloys. So, if you have a problem in spinning, stamping, machining or plating, you are welcome, without obligation, to the services of our complete staff of chemists and engineers.



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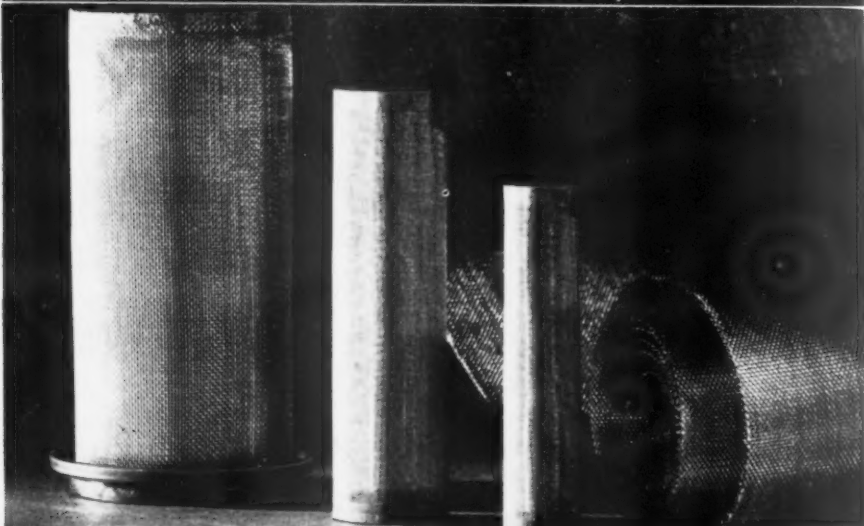
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Signode Speeds Up War Industry Shipments

Manufacturers Today Are In Many Instances Producing Unfamiliar Items . . . Facing New Problems . . . Shipping Articles They Never Shipped Before

● Signode engineers are completely familiar with government specifications for loading and bracing both carload and less than carload shipments of different materials required for the war industries.

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the national campaign to get iron and steel scrap moving into consuming channels, stressing the part which every business establishment can have in expediting this movement so necessary to defense production. The motion picture, "Unfinished Rainbows," depicting the development of aluminum production from a laboratory process to its present place of importance as a material of industry, was shown through courtesy of the Aluminum Company of America.

1 1 1

ZELOMEK AT UTICA

The January meeting of the Purchasing Agents Association of Syracuse and Central New York was held at the Hotel Utica, in Utica, on the 19th. Speaker of the evening was A. W. Zelomek, President of the International Statistical Bureau, economic consultant to the N.A. P.A. and to the O.P.M. Mr. Zelomek discussed the present economic situation and its effects on commodity markets.

1 1 1

SILVER ANNIVERSARY AT DAYTON

The Dayton Purchasing Agents Association celebrated the twenty-fifth anniversary of its organization with a gala Ladies' Dinner Dance Party at the Biltmore Hotel on January 24th. Earl Holderman's orchestra furnished music for the dinner hour and for the dancing. Special entertainment and a floor show was provided by members of the WLW

60% THICKER in the Center

the **ONLY** Shovel
Forged with a
BACKBONE!



NOTE 11"
LONG SOCKET

RAZOR-BACK is the shovel with a thicker cutting edge to resist wear, a thicker frog and heat-treated socket for rigidity and strength, and tapered sides for light weight. Guarantees more service per dollar than any other shovel on the market.

Send for Catalog and Price

THE UNION FORK & HOE CO.
Columbus, Ohio

Makers of Quality Tools for Over 40 Years

staff, and handsome souvenir gifts were distributed. W. M. Hussey of the Sterling Rubber Products Co. was chairman of the committee on arrangements.

RUBBER MEETING AT CLEVELAND

The January 15th meeting of the Cleveland Purchasing Agents Association was devoted to the timely subject of the rubber situation. E. B. Babcock, chief chemist of the Firestone Tire & Rubber Co., Akron, recently returned from an extensive tour of the Firestone rubber plantations in Liberia, and a visit to strategic points in South America, spoke on current conditions in these areas affecting our rubber supply. Frank Andrew, salesmanager of the Hycar Chemical Co., distributors of Hycar synthetic rubber, discussed the role of synthetic products in today's situation and for the future. William Welch, president of the Midwest Rubber Reclaiming Co., rounded out the program with a presentation of the sound movie, "Rubber Reborn."

HAYES AT CANTON

The Purchasing Agents Association of Canton & Eastern Ohio met at the Onesto Hotel, Canton, on January 15th. F. Albert Hayes of Boston, President of the N.A.P.A., was the speaker of the evening, presenting an inspiring message on the Purchasing Agent's responsibilities and opportunities in connection with the

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Photographic Identification Badges
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A complete, all-inclusive safety program suitable for plants of all sizes. Can be inaugurated immediately.
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**PRODUCTION,
MAINTENANCE AND
SANITATION CLEANING**

Prompt Oakite Deliveries Help You Meet Vital War Production Needs on Time!

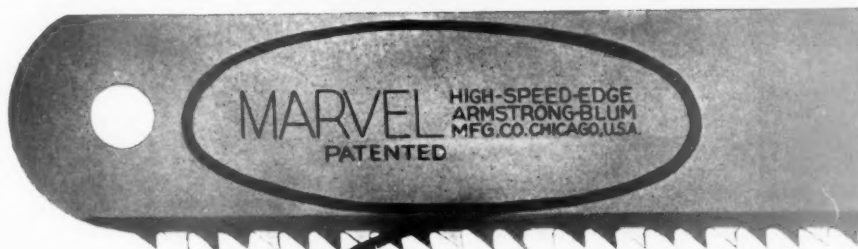
Today, filling Defense Orders is not only a matter of doing the work correctly to meet rigid specifications, but also turning it out **ON TIME!**

To help you avoid delays or interruptions in production cleaning and related operations required in manufacturing ordnance materiel and other essential war supplies, ample warehouse stocks of Oakite cleaning materials are maintained in over 35 key industrial centers from Maine to California, Minnesota to Texas. Because this Nation-Wide distribution system makes possible 24-hour delivery service to plants in over 4,800 communities, you receive Oakite materials **WHEN** and **WHERE** you **MUST** have them! Your inquiries invited.

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By standardizing on these *Positively Unbreakable* hack saw blades that permit all hack sawing machines to operate at maximum speed and maximum feed, you can increase the output of every hack saw in your plant. In **MARVEL High-Speed-Edge Hack Saw Blades** the fastest cutting, longest lasting cutting edge has been welded to a body of tough alloy steel. This composite construction gives strength to stand up to any load, and assures that each blade will last the full life of its cutting edge. Buy **MARVEL High-Speed-Edge Hack Saw Blades** from your local industrial distributor.

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Eastern Sales Office: 225 LaFayette St., New York



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But who can be in a good frame of mind when he is fishing around in the mail room or the shop... looking high and low for the small parts or samples you sent him?

PARTS BAGS

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Cotton Bags with drawstrings and address tags. Save up to 90% packing time and up to 50% postage. Handy, efficient, economical.

Write for Samples and Prices

AMES BAG MACHINE CO.

1991 East 66th St. • Cleveland, Ohio

national war program. The meeting was attended by representatives of several neighboring associations.

1 1 1

"NATIONAL NIGHT" AT PROVIDENCE

The Rhode Island Purchasing Agents' Association celebrated "National Night" at its dinner meeting January 26th at the Narragansett Hotel. Speakers were F. Albert Hayes of Boston, N.A.P.A. President, and Bernard G. Byrne of Providence, District Vice President. A portion of the program was devoted to a commodity forum under the direction of William J. Duggan of the General Fire Extinguisher Co. Special reports were presented by Fletcher P. Burton of Curran & Burton, Inc., "Fuels"; Daniel Townend of Fields Point Mfg. Corp., "Chemicals"; Carl P. Riegger of Grinnell Co., Inc., "Pig Iron"; Newton T. Dana of Industrial Paper and Cordage Co., "Paper"; and Thomas P. McCartin of Union Equipment & Supply Co., "Electrical Supplies."

1 1 1

LOS ANGELES BUYERS LEARN ABOUT CIVILIAN DEFENSE

"Civilian Defense and How It Is Operating in Los Angeles County" was the topic of the dinner meeting of the Los Angeles Purchasing Agents Association on January 8th. The speakers were Eugene W. Biscailuz, Sheriff of Los Angeles County and Chairman of the Los Angeles County Defense Council, and

For Defense Service

Heavy-duty, rugged Platform Trucks—with steel-bound, hardwood platforms securely bolted to angle iron frames to resist banging and abuse. Damaged boards can be replaced without cutting or rewelding frames. Furnished with one or two pipe handles, racks or stakes.

Strong, sturdy and easy rolling wheels and casters, with semi-steel or vulcanized rubber-tired wheels, plain or roller-bearing.

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Harold W. Kennedy, Assistant County Counsel and Executive Director of the Defense Council. E. W. Beck, Manager of Purchases for the General Petroleum Corp., was chairman of the day.

MILWAUKEE BUYERS HEAR ABOUT CIVIL DEFENSE

Joseph T. Kluchesky, Chief of the Milwaukee Police Department, addressed the January 13th meeting of the Milwaukee Purchasing Agents Association on the topic "Civil Defense", outlining plans and preparation which have been made and stressing the responsibilities of every individual. The meeting was preceded by an afternoon commodity forum.

SEATTLE MEETINGS

Dr. N. H. Engle, Director of the Bureau of Business Research, University of Washington, addressed the January 8th dinner meeting of the Washington Purchasing Agents Association on "Meeting Purchasing Problems in Today's War Economy." Dr. Engle's address was illustrated with significant charts covering price trends, employment, national income and expenditures, etc., providing a valuable background for his subject. He made the point that business should even now be giving serious thought to the problems and adjustments in changing from a war economy to a peace-time economy, to be prepared when that time

Speed Up Material Handling with "ON-THE-SPOT" CHARGING of Electric Truck Batteries

FEATURES:

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Can be easily installed anywhere in the operating territory of the truck... is readily transferred to another point when occasion requires.

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All parts enclosed in a substantial steel casing... maintenance reduced to a minimum due to elimination of moving parts.

Saves time, labor and power ordinarily lost in going to and from a central charging station.



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SAFETY

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WEDGE GRIP RADIUS HOLDER



For marking around circumference of shell forgings, bars, tubes, and other round pieces. Adjustable for stamping on different size radii. Safety Steel construction eliminates spalling and mushrooming.

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154 E. Carson St. Pittsburgh, Pa.

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Straight Carbon Tool Steels	Special Alloy Steels
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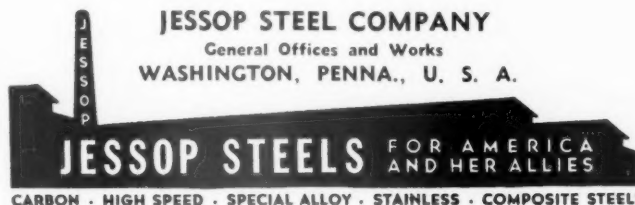
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The Jessop Steel Company also makes various types of stainless steels, composite steels, and special steels. Our five warehouses and numerous branch offices and agents are at your service. Consult your telephone directory, or write to the mill. Your inquiries will receive prompt attention.

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DIAMOND WHEELS

- FASTER CUTTING
- BETTER WORK
- LONGER LIFE



CEMENTED Carbide tools can be sharpened faster, more accurately and economically with **SECOMET DIAMOND WHEELS**, made of the finest quality boron and resinoid bond . . . A wide range of standardized sizes and types of diamond wheels is on hand enabling you to select a suitable wheel to meet any ordinary requirements, for extraordinary results. Write for new price list.

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NEW CATALOG FOR WAR INDUSTRIES

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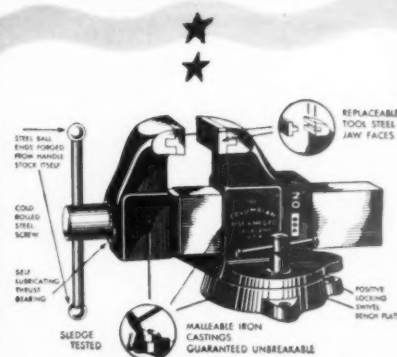
Harper can supply war industries and other priority holders with fastenings. This 1942, 4 color, 80-page Catalog gives details. Write for complimentary copy today. Harper maintains **4320 STOCK ITEMS** . . . of non-ferrous and stainless bolts, nuts, screws, washers, rivets and related items . . . and operates special machinery to produce a host of "hard-to-make" fastenings. Today Harper Products are being used by thousands of war manufacturers. Mail your Catalog request now.

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COLUMBIAN VISES WILL HELP Turn Defense into Offense!



★ With the whole country ordered to speed up, Columbian Vises are doing their part. If you need quicker and more efficient bench work to promote production in your plant, see your Columbian Distributor.

The Columbian Vise & Mfg. Co.
9015 Bessemer Avenue, Cleveland, Ohio
THE WORLD'S LARGEST MAKERS OF VISES

DAYTON GRINDING WHEELS

A complete line of abrasive wheels. Inquiries given prompt attention.

Simonds Worden White Co.
Dayton, Ohio



comes. Stanley Cowdell presented a report on business conditions, commodity markets and price trends, and Foster Chapin spoke on "Substitutes."

"The Far Eastern Situation" was the topic of a luncheon meeting on January 22nd.

The annual Midwinter Party and dance was held at the Meany Hotel on the 31st.

♦ ♦ ♦

JUNIOR BUYERS MEET

The Metropolitan Purchasers' Assistants Club held its January meeting at Midston House, New York City, on the 13th. Speaker of the evening was M. E. Muniz, Director of the Psychological Testing Bureau, who discussed "The Human Element in Purchasing" and gave a demonstration of psychological test methods.

♦ ♦ ♦

JUNIOR ASSOCIATION FORMED AT ROCHESTER

Under the sponsorship of Roman Taylert, Chairman of the Education Committee of the Rochester Purchasing Agents Association, an association of junior buyers has been organized in that city, with membership open to purchasing assistants and buyers. The new group starts auspiciously with a membership of 45. It will be known as the Rochester Chapter, Association of Industrial Buyers. The first regular meet-

ing was held on January 14th, with Attorney Arthur Rathjen as the speaker on "Shifting Foundations." Mr. Rathjen discussed the rapid changes now being experienced in the field of contracts of purchases and sale, as the contractual rights of the individual must give way to the best interests of the country. While most of the changes recognize the basic principles of contract law, there are some cases in which they run counter to the rights of the individual as specified in the Constitution. The speaker advised his hearers to be prepared for change, to familiarize themselves with the new regulations, and not to be "too technical" where contracts are concerned.

Officers of the new association are:

President, Fred W. Haines, Eastman Kodak Co.

Vice President, Charles Lechner, Richardson Corp.

Secretary, William T. Kelly, Rochester Telephone Co.

Treasurer, Matthew Kuebel, Taylor Instrument Cos.

Directors, Edward Van Leer of Eastman Kodak Co., Louis Mumford of Rochester Mfg. Co., and E. Arthur Downs of Defender Photo Supply Co.

1 1 1

E. R. Parsons has resigned as Purchasing Agent for the Lakeside School for Boys, Seattle, to accept a position as accountant with the 13th Naval District.



Thousands of
PRODUCTIMETERS
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ALL-OUT PRODUCTION

Industry knows Productimeters. Years of research and engineering are behind their accuracy...their speed...their precision...their rugged construction...their dependability for reliable production control. **PRODUCTIMETERS** are prepared now to answer the call on our first line of defense, the production machines of America.

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Complete Catalog!

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PRODUCTIMETERS
THE SPEEDMETERS OF INDUSTRY

Spartan

DELIVERS THE GOODS!



Yes—Spartan is delivering the "goods"—and they're "tops" in quality!

Try Spartan Hack and Band Saws for real cutting satisfaction!

Spartans will always be tough to beat!

See your distributor today.

SPARTAN SAW WORKS, INC.
Springfield Mass.

HACK and BAND SAWS

ALL OUT DEFENSE AGAINST FIRE WITT OILY WASTE CANS

Are safe containers for the disposal of oily rags, waste and other inflammable refuse.

Place them in convenient locations throughout your plant. They reflect good housekeeping and are protection against fire.

Each WITT OILY WASTE CAN is guaranteed and bears the label of inspection and approval of Underwriters Laboratories, Inc. and Associated Factory Mutual Insurance Companies.

Made in two models—Hand or Foot Operated Covers—7 sizes—5 to 30½ gals. capacities.

Write for the Witt catalog or see your jobber.



Two Models—Hand Operated
or Foot Operated.

The WITT CORNICE Company
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Webster-Brinkley Co., Seattle, Wash., makers of Steering Engines for ships, filed 13,200 port openings in cast iron cylinder valves with DoAll Band Files in 1/5 former time.



KEEPING UP WITH UNCLE SAM

A ship a day going down the way! That's the program for 1942.

DO ALL BAND FILES fit into this production picture perfectly. They are 8 times as fast as hand filing, 5 times as fast as jig filing, saving millions of valuable man hours and speeding up finished production wherever filing and polishing are essential.



Wide Range of Sizes

DoAll Files come in 20 different styles, cuts and widths, to take care of anything from hard high carbon steel to soft brass, etc.

Send for Literature today

THE DO ALL COMPANY
1214 Thacker St. Des Plaines, Ill.
Associated with Continental Machines, Inc.
Minneapolis, Minn.

HOW TO SAVE RUBBER FOR WAR USE

By following a few simple rules during the war time emergency, every industrial plant in America can extend the life of its equipment made of rubber, thereby adding to the nation's supply of this vital product, according to a statement issued by W. H. Cobb, general manager of the Mechanical Goods Division of the United States Rubber Company.

"Such action will provide a valuable contribution to the war effort," he said, "in addition to effecting operational savings in the plants. Orders issued by the OPA rationing tire sales have emphasized the need for conserving every possible ounce of rubber for war uses. Every time a plant saves 13 1/4 ounces, for instance, another gas mask is made possible.

"Certain general rules can be applied to all goods made of rubber. Among the greatest enemies of rubber are oil, grease, and gasoline. These are all very destructive, and rubber products should be kept away from them as completely as possible. The life of conveyor belt, for example, is often cut short by destructive operations such as unnecessary abrasion, misalignment, uncushioned impact, as well as being subjected to leaking oil conditions.

"Also, rubber goods should be stored in a cool, dry atmosphere and kept away from direct sunlight and high temperatures.

"Never place rubber in enclosed generator rooms or near electric motors.

**SALT LOSS CAUSES
HEAT RAG**
WORKERS WHO *Sweat* NEED Salt
• USE MORTON'S SALT TABLETS •
Morton Salt Co., Chicago, Illinois

MULTIPLEX DISPLAY FIXTURE FOR SALE

A #63 Floor type revolving Multiplex Display Fixture with a ten wing capacity, complete with 10 wings 24" wide by 36" high, 1" beveled moulding frames, fillers of thumb-tack board covered with brown bur-lap.

Entire fixture finished in crinkle antique bronze.

Complete with shipping case. Ideal for display of advertising material, for convention exhibits or in office maps, charts. In excellent condition.

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**Superior
BOLTS**
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CLARK BROS BOLT CO.
MILDALE, CONN.
Also—NUTS
SCREWS
RIVETS

Paintcil Has Kept My Face from Getting Red!

"Paintcil has saved us plenty of embarrassment and money. Now we always mark our raw stock with this handy paint in stick form because it quickly and permanently identifies materials.

"There's no chance for confusion—no necessity to explain illegible markings or 'lost' materials."

Easy to carry and to use as a pencil. White and many colors.

Write or wire for actual samples.

Insist on this genuine paint in stick form. Specify "Paintcil."

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HELMER-STALEY, INC.
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Welded on both sides



WHAT T-M FLASH ALLOY STEEL Means in Sling Chains

Heat-treated alloy steel, the toughest, most ductile, and resistant to work-hardness and abrasion, is chosen for T-M Flash Alloy Steel Sling Chains. T-M Design and T-M Electric Flash Welding perfect these chains for heaviest loads, longest wear.

Taylor-Made ALLOY STEEL SLING CHAINS

Each link is an absolute weld of both sides of the two U-shaped halves, positively insuring a stress-free weld.

Inside surface reinforcing bulges on both sides of link. Extra metal adds extra strength. Close-hitched links minimize bending around corners. Chain and attachments heat-treated after assembly to insure uniform strength.

The Taylor-Made Line is complete. Put your chain problems up to us. We believe we can help you. Ask for illustrated catalog and data.

Established 1873

S. G. TAYLOR CHAIN CO.
HAMMOND, INDIANA

If the air around these contains even a minute quantity of ozone, which is created by these machines, it will have an extremely oxidizing effect on hose, belting, packing and other mechanical rubber products, aging them to an abnormal degree.

"The actinic rays of the sun are harmful to all rubber goods (except some types of synthetics). The effect is to deaden the resiliency of the rubber, burning it almost like sun burns human skin and in time resulting in a charred, cracked surface.

"Excessive heat will also harden and crack the rubber and seriously affect the service life of a product manufactured from it. Therefore, avoid steam pipes and boiler rooms.

"Rubber products should never be hung on nails, hooks, across boards, or any objects which might cause them to bend sharply or which might place a strain at any one point. Hose, wire and belting under permanent strain are subject to deformations which may cause them to crack or to break when under pressure. This applies to all grades of products from the highest to the lowest quality.

"It is dangerous practice to 'borrow' or substitute one type of rubber product for purposes other than those for which it is specifically recommended, even though the particular article may seem able to 'take it.' Destructive action or unwarranted strain often takes place which may result in premature failure. In other words, the product should be chosen in consultation with an expert for the specific service for which it is intended."

S. R. Curtis, Purchasing Agent of the Stromberg Carlson Co., Rochester, N. Y., has been appointed Manager of Production Control at that plant. He will continue to supervise the purchasing department, with Robert Edwards actively in charge of buying.

We've Got it!

DOES YOUR GRANULATED INDUSTRIAL SKIN CLEANSER

have THESE THREE SAFETY FACTORS

1. pH Below 10
2. No Free Alkali
3. Low Alkaline Salts (not to exceed 8% calculated as sodium carbonate) buffered and balanced against pH.

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2042 WALNUT, DEPT. C ST. LOUIS

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KEEP Your SHIPPING ROOM OUT OF THIS GLASS HOUSE



• As faster and faster production becomes the order of the day—packing and shipping methods, too, must be stepped up. Output-per-man must be increased. Time and materials must be conserved.

General Box engineers working with manufacturers of many types of products have helped reduce packing and shipping time and costs—helped eliminate delays in the delivery of vital products.



• Heavy motor blocks are packed quickly, travel safely in the General Rock Fastener Box.



• For all types of products, from food to thousand pound generators, General Boxes, Crates and Special Containers can help shipping keep pace with production.

Mail the coupon for a copy of this booklet illustrating the benefits other manufacturers have obtained from General shipping containers.

GENERAL BOX COMPANY

General Box Company, 48 W. Illinois St., Chicago, Illinois. District Offices and Plant: Brooklyn, Cincinnati, Detroit, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, East St. Louis, Winchendon.

() Send a free copy of the booklet illustrating engineered shipping containers.

() Have a General Box engineer call

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**FASTEST METHOD
OF CUTTING
SHEET METALS**

STANLEY UNISHEARS



No. 144A Unishear handling a tough cutting job in Railroad Repair Shop

This money-saving equipment is 100% portable. Unishears will cut any shape—straight, angles or curves—with hairline accuracy. No waste or distortion of metal. Speed, as you feed, up to 15 feet per minute. Universal motor can be plugged into any lighting circuit.

No. 144A Unishear has a capacity of 12 U. S. Gauge ($\frac{7}{16}$ ") hot rolled steel. Two lower capacity portable models are available and five stationary models to handle sheet metal up to 10 gauge.

Ask for demonstration or catalog.

Stanley Electric Tool Division, The Stanley Works, New Britain, Conn.



STANLEY UNISHEARS
THE ELECTRICALLY DRIVEN HAND SHEARS

ERIE SHOWS THE WAY IN SALVAGE CAMPAIGN

(Continued from page 56)

substantial number of plants the Purchasing Agent is responsible for the disposition and sale of scrap and surplus materials.

Two other factors are highly important in working out the plan. One of these is the foremen's group, through whom the salvage story is carried into the plant and to the men at the machines. The Erie Foremen's Association has held meetings devoted especially to salvage discussion, studying successful methods adopted in other plants and exchanging experience and ideas. They have been addressed by Mr. Bliven and by representatives from the Salvage Section in Washington. This cooperative spirit is highly desirable and helpful. As a matter of work organization, however, they approach the salvage problems in their respective plants under the general direction of the man appointed as Salvage Director.

Through the foremen, operators are made conscious of the salvage program, to avoid unnecessary waste of material, to recognize salvage values, to keep various types of scrap free from contamination, and to handle scrap materials most effectively.

A second group which has assisted notably in carrying out the plan consists of the waste material dealers in that area. As stated above, it is the policy of the Erie Plan to make use of existing channels of scrap collection and disposal, and a complete list of dealers is maintained for the convenience of all plants. This list includes all types of dealers, from the horse-and-



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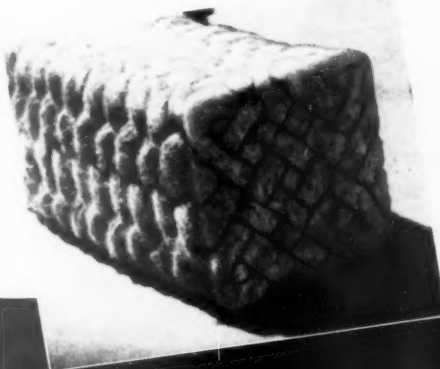
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wagon collector to the large yard equipped for the classification and preparation of scrap. It includes those who specialize in metals, in paper, or other forms of waste. There have been meetings of the waste material dealers with the Executive Committee, and OPM staff members have also discussed the problem with them as a group. Scrap prices are definitely kept out of these discussions, as the objective is primarily to get the scrap moving and to put it back promptly into the markets where it becomes available again as a raw material for manufacturing programs.

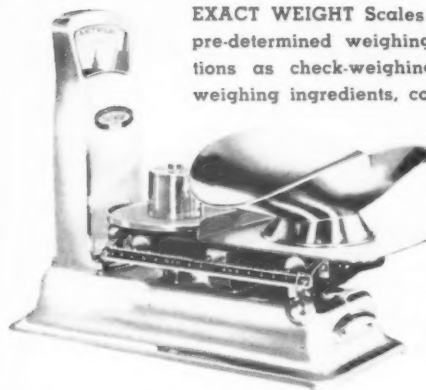
In this respect, the dealers have made a fine contribution and have cooperated to good effect. In a typical yard where the turnover of scrap has normally been at a rate of only three or four times a year, carloads are now rolling on the tracks, en route to mills and foundries, within thirty-six hours of collection, and the entire tempo of scrap movement has been speeded measurably throughout the area. This is exactly what is intended, and is the best possible aid to Victory production where these materials are desperately needed.

What has been accomplished by the Erie Plan can not be measured entirely in the reports of tonnage, but that is one indicator. The record of the first two weeks shows a grand total of 2,292 tons of scrap recovered in the various classifications, the greater part of this being in the form of iron and steel from the disposal of old and idle machinery, recognizing the soundness of the slogan, "Any equipment that is not being used now will never be used. Junk it!" But in all classifications, the accumulations from relatively small sources have run into carload quantities.

The first returns, from these drastic housecleaning operations, will presumably be greater in actual vol-

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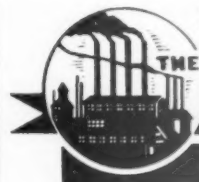
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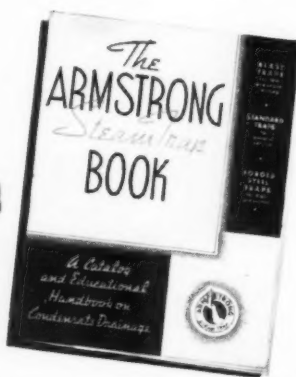
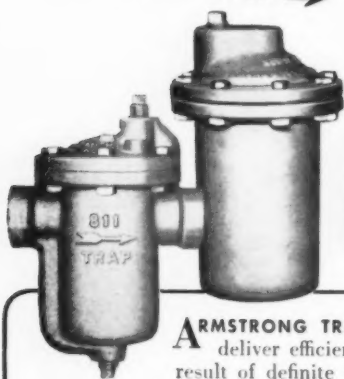
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time than when the plan gets working on a routine basis. But the very fact that these larger quantities are being made available now, when they are most needed, is a great point in favor of the campaign. Machinery can be scrapped only once, of course, and accumulated waste piles will no longer be lying around as the plan gets under way for one of the prime objects of the plan is to prevent such dead storage. But this does not by any means imply that the campaign will have served its purpose in the initial weeks. The goal for 1942 is the recovery of 10% to 15% more scrap than would normally be returned from the district, and this is considered a conservative estimate even though every effort will be made to prevent waste at the source in more careful and efficient management. The significance of that additional volume of useful scrap for manufacturing purposes is obvious.

Aside from the bare statistics concerning this scrap which has actually been moved, there are interesting reports of additional quantities of scrap which have been utilized in the operations of the company producing it or by direct transfer to neighboring plants, and of machinery inspected with a view of scrapping it, only to find that it was capable of being rebuilt for additional service. And through it all runs the theme that the cooperating plants have found the Erie Plan a profitable venture, recovering cash values from materials which have too frequently been considered in terms of loss rather than of revenue.

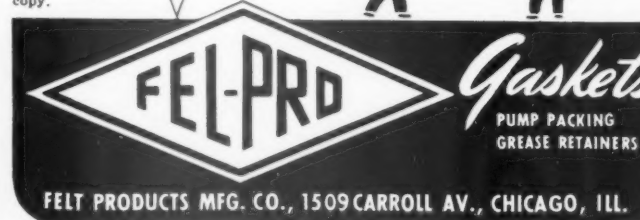
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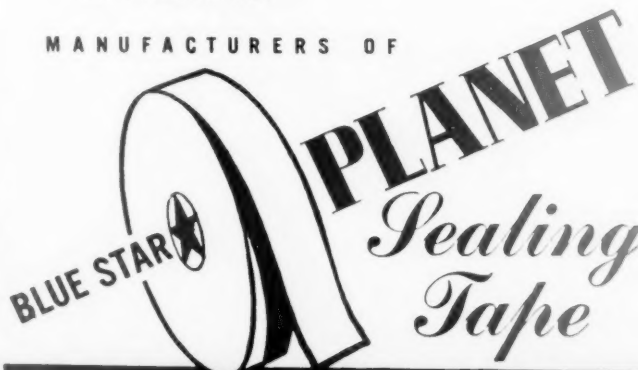
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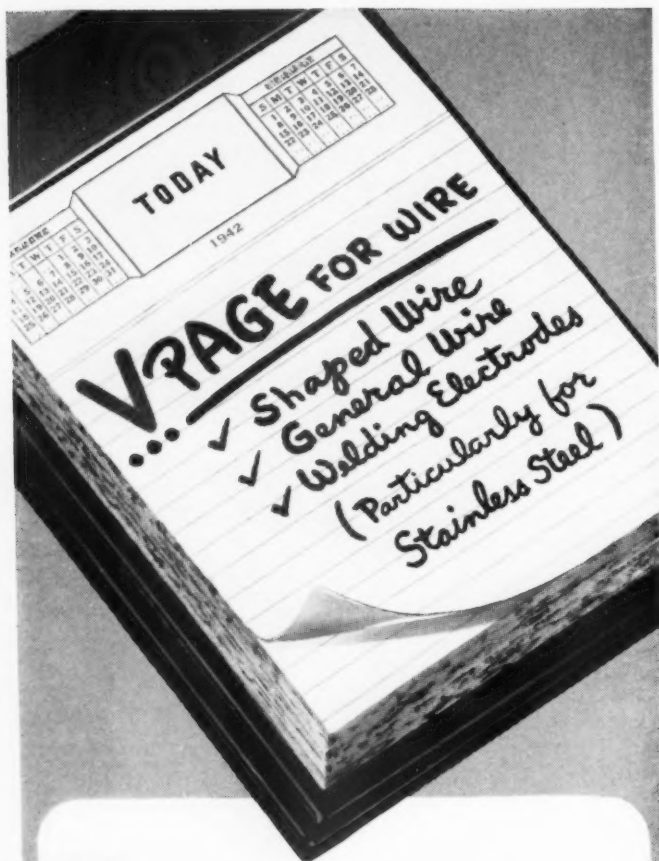
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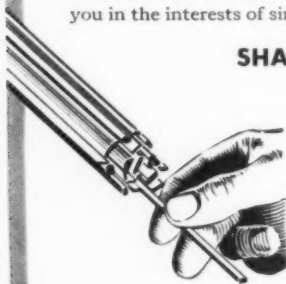
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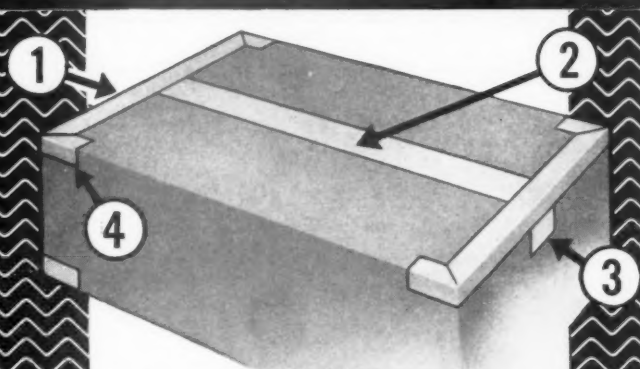
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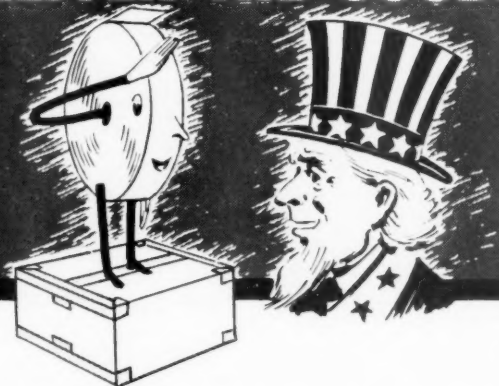
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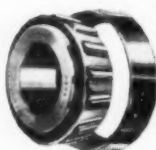
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such an active salvage campaign and by the patriotic motives expressed in OPM's appeal to "Get in the Scrap!" for defense and for victory, is only the starting point for a better realization of the permanent values in conservation and salvage. Management can be relied upon to proceed from this starting point to a lasting improvement in salvage policies and methods.

Moreover, the procedure itself is so simple that any competent association secretary can set up the plan in his own community and start the wheels turning. It doesn't even require any great amount of imagination now, for the complete blueprint is available in the experience of Erie—the organization, the methods, the materials of publicity and instruction. Erie has shown the way, and has made a notable contribution to the national production program in the development of the Erie Plan.

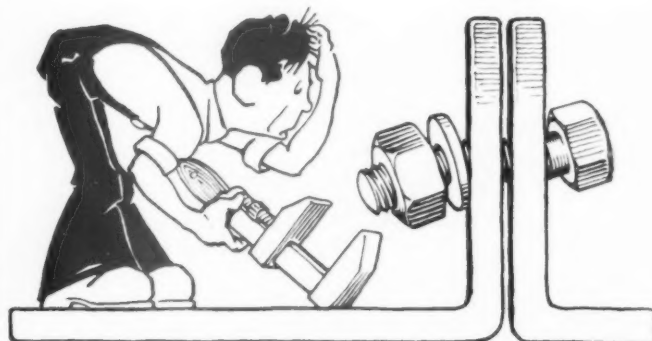
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CONSERVATION PROGRAM

(Continued from page 59)

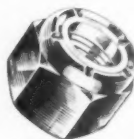
operate in conjunction with each Defense Council, assigning a bureau man to each as executive secretary, and thus tie in the salvage program directly with the defense effort.

At the local offices, lists are maintained of waste material dealers who will buy and collect the material and start it moving back into industry; also lists of



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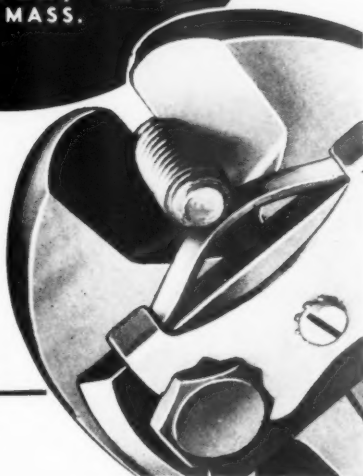
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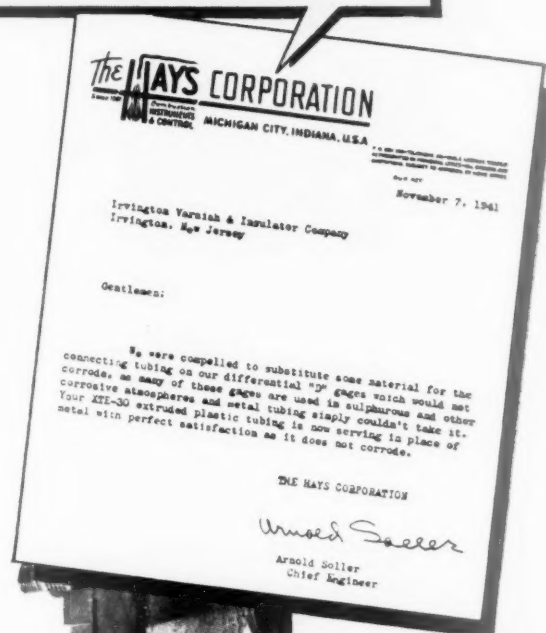
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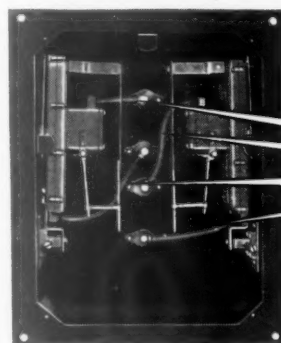
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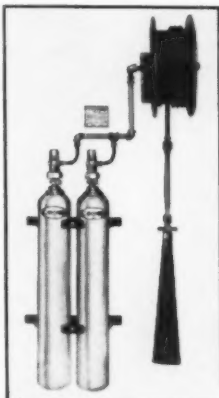


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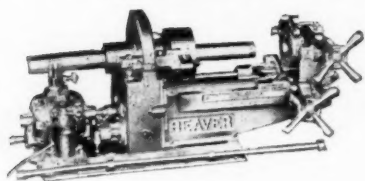
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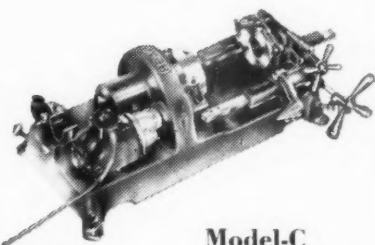


Model-A

A high-speed heavy-duty deluxe Pipe and Bolt Machine. Range $\frac{1}{4}$ to 2-inch—up to 12-inch with geared tools and drive shaft. Bolts, $\frac{1}{4}$ to 2-inch. Wt. 415 lbs. Ask for Bulletin-A.

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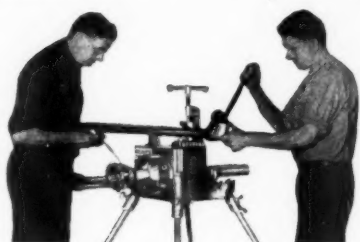
A compact utility Pipe and Bolt Machine combining many features of Model-A with the easy portability of Model-C. Range $\frac{1}{4}$ to 2-inch—up to 8-inch with drive shaft and geared tools. Bolts up to $1\frac{1}{2}$ -inch. Weight 280 lbs. Ask for Bulletin-B.



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Converts Hand Pipe Tools into Power Tools from $\frac{1}{4}$ to 8-inches. Threads 8-inch in 6 minutes. Threads bolts up to $1\frac{1}{2}$ -inch. Equipped with automatic chuck wrench ejector—a safety feature. Two men can use it at the same time without interference. Easily portable—weighs about 150 lbs. Write for Bulletin-C.



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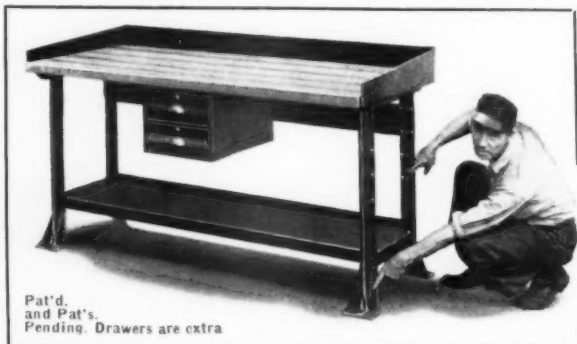
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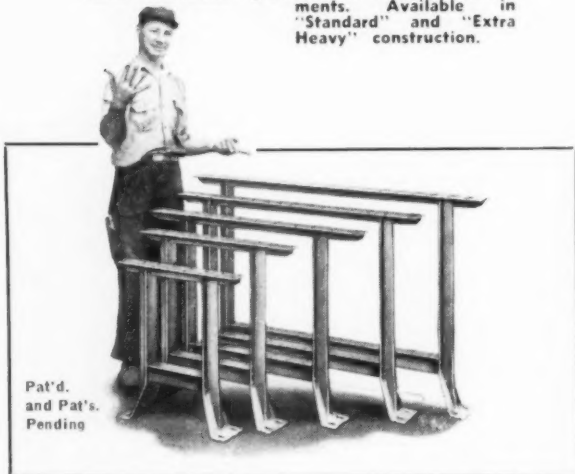
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charitable institutions and other organizations which make a practice of collecting scrap for resale and are frequently willing to do this on a route basis, calling for smaller quantities than would be practicable for the regular dealer. Eventually, of course, it all comes back to the same place—to the industries where it is urgently needed for production today. In the City of Baltimore, the local office has handled as many as 2,000 pick-up calls in a single day, and made arrangements for the collection.

To concentrate small quantities in sufficient volume to make collection economically practicable, a further use is made of the Defense Council organization. Where such a need arises, the compact geographical unit of the Air Raid Warden District is taken as a basis, and some one is found to volunteer the use of an idle garage or yard space where the small quantities can be assembled from the neighborhood until a collectible quantity is on hand.

Special emphasis is being placed on four groups of materials most likely to be gleaned from these domestic sources—waste paper, old rags, scrap metals, and old rubber. These are stressed in the leaflets and posters used to promote the program to inspire every citizen to "Get In the Scrap." These are very general classifications, to be sure, but they are broadly inclusive and adapted to the purpose. Classification and segregation of scrap is not likely to be carried much farther than this in the home, and would probably result in excessively small units. But the collectors and yards are equipped to perform this function, and as in the case of industrial salvage, the plan contemplates making full use of these existing agencies.

Another important contact is with the Agricultural

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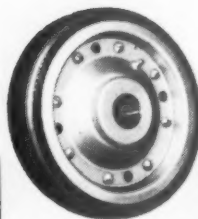
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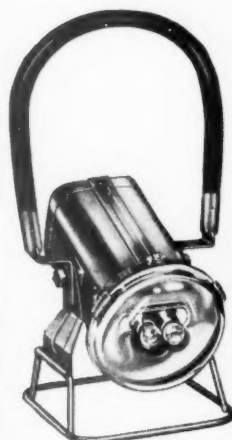


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Safety
CANS

TODAY'S equipment has to be good. It has to meet the strain of the greatest productive period this country has ever known. It has to deliver—efficiently and economically—24 hours a day—month in and month out. That's why it pays to be particular—today more than ever before. And that's why the demand for Justrite Safety Cans is increasing every day. They're built to last—built to take hard knocks and rough usage and still operate efficiently. For safe, economical handling and storage of explosive and flammable liquids, specify Justrite Safety Cans—and get the best.

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3. **Large Nozzles.** Easy to fill and empty. No funnel needed.
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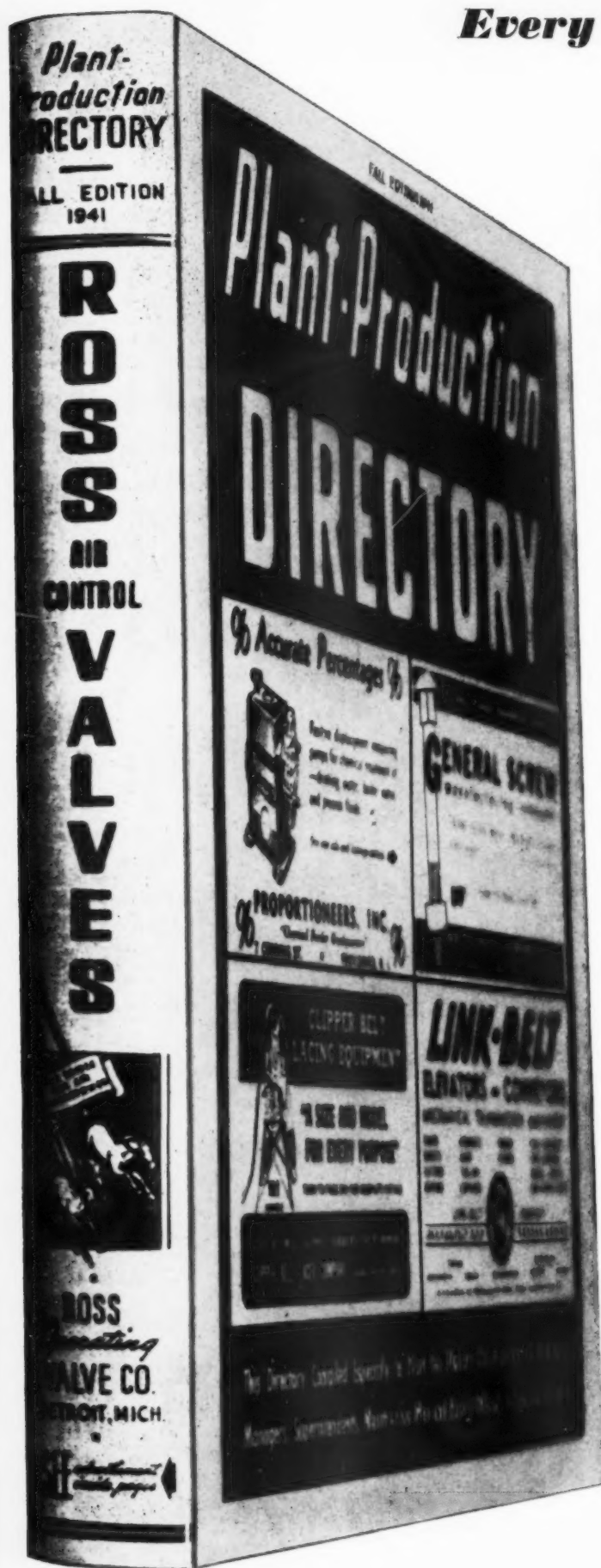
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Defense Board, under the jurisdiction of the Department of Agriculture. Each State Salvage Committee and many of the local committees include a member of the Agricultural group, with the objective of bringing out the heavy rural scrap such as abandoned farm machinery, which ordinarily would not find its way into the scrap markets but would lie idle and rust away in fields and barns.

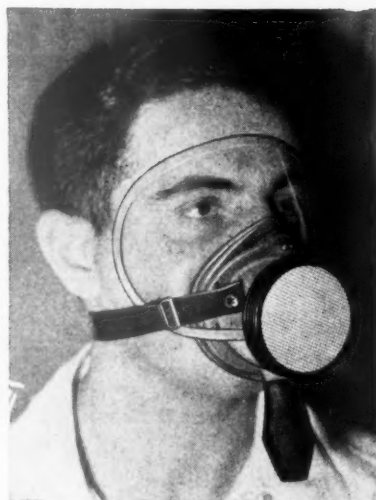
On all fronts, the Bureau of Industrial Conservation is moving toward the more effective utilization of materials, the conservation of critical materials for essential uses, and the prompt and efficient recovery of waste.

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DISTRIBUTOR SECTION SET UP IN W.P.B.

A Distributor Section has been created in the Division of Industry Operations of the newly organized War Production Board in Washington. This section will assist in the conducting and interpretation of the Production Requirements Priority Plan, through which supply houses are effectively serving essential manufacturing industry and helping to keep production at maximum efficiency. It will thus be the point of contact for industrial distributors with the governmental organization. It is staffed with men well known in the field and well acquainted with its specific problems in the present emergency. L. C. White has been appointed chief of the section. Russell C. Duncan, Clifford B. Cecil, William D. Pinkham and C. McKew Parr have been appointed senior consultants.

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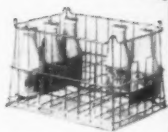
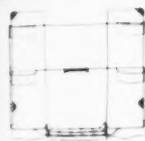
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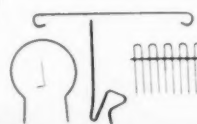
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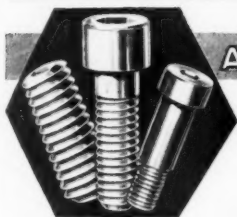


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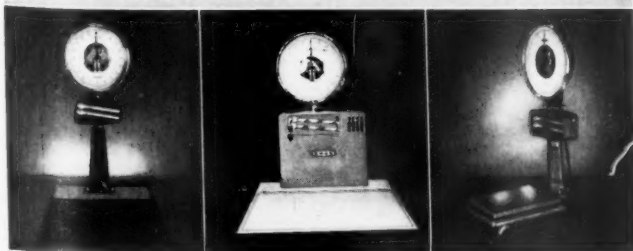
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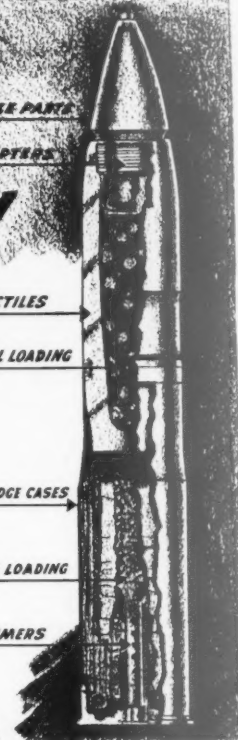
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REPUBLIC

Has a DOUBLE Responsibility

DEVOTED exclusively to the manufacture of rubber products for industry. Republic has the clear-cut responsibility of a specialized worker . . . the responsibility of maintaining for industry the completely capable performance of mechanical rubber equipment to which such specialization lends itself.

In addition, preserving that same product quality is Republic's expressed duty to the nationwide Republic Distributor organization. One of the provisions of the Republic 5-Point Policy, pioneer doctrine of the Republic—Mill

One of the complete line of Republic Mechanical Rubber Products—Tower Pneumatic Hose.



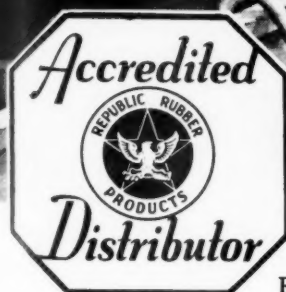
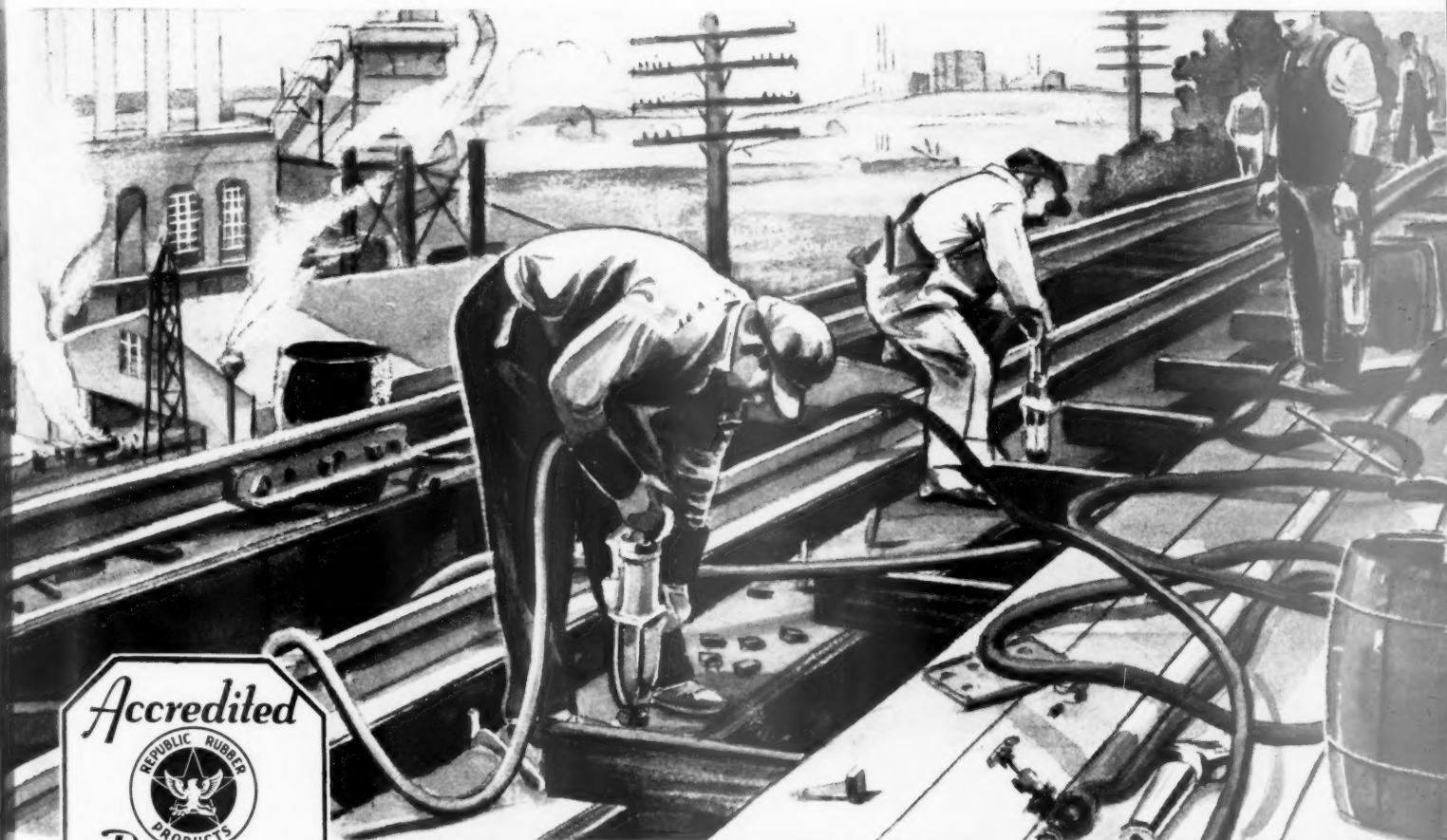
Supply House relationship, is Republic's pledge of highest manufacturing standards.

This double responsibility has for years influenced Republic's every effort. Present conditions have, of course, accentuated its importance beyond all previous experience. **REPUBLIC RUBBER DIVISION OF LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN, OHIO.**

REPUBLIC RUBBER



HOSE • BELTING • MOLDED GOODS
PACKING • EXTRUDED PRODUCTS



Republic Distributors are, in a sense, as much a part of Republic as any department at the huge plant. As exclusive outlet for Republic Rubber Products in all sections of the country, they are the true sales organization. They are doing an exceptional job in serving present needs for Republic Belting and Hose.



*1/16 the thickness
of a fly's wing!*

YOU CAN GRIND THAT ACCURATELY WITH A DUMORE



**A SIZE AND SPEED
FOR EVERY NEED!**



"The Chief", with 1 h. p. motor, is a powerful grinding unit built to tackle the biggest and heaviest work—internal or external. Designed for a wider range of work and greater output.



Despite low cost and small size, the "Tom Thumb" is the tool post grinder for small bench and shop lathes, built ruggedly enough for machine shop work.

Delicately controlled precision . . . to .0001" . . . this is regular, everyday performance with Dumore Grinders. Mounted on a lathe, planer, shaper, milling machine, or other machine tool, a flexible Dumore Grinder cuts costs . . . helps make more profit with your present machinery, and efficiently handles tool room and production grinding jobs, internal or external. *Positive performance . . . unfailing accuracy . . . speed . . . and, above all, certainty* that Dumore Grinders will deliver peak performance under sustained operating loads . . . these are vital, intangible Dumore features.

A quarter-century of precision grinding research stands back of Dumore Grinders' ability to give steady, better-than-average performance. Honest, experienced craftsmanship—tested selected materials—a manufacturing policy that does not compromise with standards of superiority — all are built into every Dumore Grinder. Call your nearest Dumore Industrial Distributor today, and investigate their possibilities.

THE DUMORE CO. 352-B RACINE, WISCONSIN

Dumore* PRECISION *Grinders

HOLTITE Fastenings

DEFENSE
APPROVED

Accurate, sturdy and consistently uniform, HOLTITE Fastenings will speed your assembling operations to meet priority delivery schedules. Fully familiar with government specifications and aviation requirements this plant is completely equipped to produce regular and special fastenings and parts from SAE 2330, SAE 3135, SAE 4130 steel, brass and other alloys with Class 3 fit, and Cadmium plating to .0002" and .0003". Specify HOLTITE on your next order.



CONTINENTAL SCREW CO

New Bedford, Mass. . . Warehouses at Detroit & Chattanooga



Courtesy of Borden Company

TAKE A TIP ON VALVES FROM ELSIE THE BORDEN COW

NOTHING is too good for Elsie. She gets her beauty bath every day, she rides on merry-go-rounds, she gets milked in snow white quarters.

She's made history as Queen of the World's Fair, in the "Dairy World of Tomorrow"... and probably nowhere else in the world could she have been surrounded by better things in life, or served by better equipment.

It is not by chance that Borden, in specifying equipment for the "Dairy World of Tomorrow", specified Jenkins Valves. For Borden, through many years' experience in many of their 75 model plants throughout the country, have approved Jenkins Valves on the basis of clean operation, low maintenance and long, trouble-free life.

In a typical Borden Plant, the Wil-

low Brook Pasteurizing Plant, Jenkins Valves have served for more than 19 trouble-free years... in heating and cooling the milk... in sterilizing bottles and cans... and on steam and water lines, from start to finish.

Yet, as fine as it is, this record of Jenkins Valves in service in the Borden Company is not exceptional. It is the rule with Jenkins. On file are records of hundreds of valves that have served in continuous operation as much as 50 or more years, with little or no atten-

tion, little or no maintenance costs.

Consider these proved records of Jenkins Valve economy when you consider valve replacements for the plant you operate, or installations in the plants for which you write specifications. We believe that, when you do, you'll agree it's just plain commonsense engineering to depend on Jenkins Valves. *Especially as you pay no premium for Jenkins Quality.*

JENKINS BROS., 80 WHITE ST., NEW YORK.
Bridgeport, Atlanta, Boston, Philadelphia, Chicago,
Houston. Jenkins Bros., Limited, Montreal; London.

Available through good supply houses everywhere.



JENKINS VALVES

For every plumbing, heating industrial service—Bronze, Iron, All Iron, Cast Steel Corrosion-Resisting Alloys—1/8" to 36"—125 to 600 lbs. pressure.



MATE

100 WAYS IN WHICH YOU C

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CENTRALIZE R

Materials are scarce. They are needed in the national War Effort. It is the responsibility of everyone to get the most from every pound of material, in whatever form, and turn it into the stream of production.

Because "everybody's business is nobody's business," to carry out the present industrial task, the first step in a program is to assign responsibility for these activities.

In the large company, it is preferable to appoint a Material Conservation Director to the General Manager and devoting his entire time to the Conservation Committee including the Purchasing Agent and the Storekeeper.

In the medium size company, the Purchasing Agent should carry out the program because of his normal responsibility for material. A member of the department is delegated for conservation activities.

In the small company, the Purchasing Agent, or the Storekeeper, should carry out the activities.

CONSERVATION DIRECTOR

1. **Coordinate all departments** in general conservation program as indicated in adjoining columns. Devise effective methods, and supervise where necessary.
2. **Provide educational material**, instruction sheets, posters, speakers, etc., to reach every worker in the organization.
3. **Determine** whether material shall be reclaimed or scrapped. Arrange for prompt disposal.
4. **Inspect all refuse** to detect waste, and educate production executives to correct such conditions at the source.
5. **Comb the plant** for dormant scrap, unused and abandoned equipment, obsolete dies and parts, material now being destroyed or burned but which has salvage value.

PURCHASING

15. **Keep up-to-date** on all limitation orders and other regulations affecting use of materials. Inform all departments on status of scarce materials. 32.
16. **Conservation begins** with purchasing the right quantity of the right material for a specific purpose, in the right sizes for economical manufacture. 33.
17. **Recheck widths**, lengths, sheet sizes, etc., to insure punching, cutting, or stamping with minimum waste of material. 34.
18. **Accept a proportion** of "random standard" sizes of smaller dimension than specified, when these can be utilized, so as to help producer use the full capacity of his machines. 35.
19. **Hold in stock** short ends, clippings, etc., which can be utilized for smaller parts and products, rather than returning these as scrap. Keep production department advised of such stocks. 36.

MATERIALS WILL WIN THE

YOU CAN PUT THEM TO WORK WITH A CONSERVATIVE

How every industrial plant, large or small, can organize now for better utilization of materials and equipment, and to return scrap promptly into channels of production.

MANAGEMENT RESPONSIBILITY

...ed in unprecedented volume for the success of our Nation
...f everyone in American industry to get the utmost use
...orm, and to see that waste materials are promptly re-

...ly's business" and because of the magnitude of our
...ogram of conservation and salvage is to centralize the

...o appoint a Director of Conservation, reporting directly
...tire time to this project. He works with and through a
...naging Agent, Production Manager, Chief Engineer, and

...ing Agent can most effectively direct the conservation
...for materials control and the disposal of salvage. A
...conservation work, working closely with all other depart-

...gent, Superintendent or Manager directs conservation

SOURCES

Information and assistance on special problems is
available from the following:

Bureau of Industrial Conservation,
Harvey A. Anderson, Chief, Conservation
C. L. Warwick, Chief, Specifications
Edwin W. Ely, Chief, Simplification
George T. Weymouth, Chief, Salvage
Herbert L. Gutterson, Chief, Scrap

Committee on Conservation and Salvage
American Society of Mechanical Engineers

The Salvage Committee of your State

The Trade Association of your industry

Local manufacturers' associations.

The Bureau of Industrial Conservation
salvage problems in each industrial area, where

STORES

32. Speed up stores service on a high turnover basis.

33. Eliminate duplicate stocks wherever possible, and issue by transfer to branch stores as required.

34. Suggest items where standardization and simplification can be used to reduce the number of items carried in stock.

35. Maintain up-to-date list of surplus materials and supplies for the information and use of purchasing department.

36. Compile list of slow moving items with a view to eliminating these in favor of standard fast

ENGINEERING

44. Review and revise product specifications away from scarce materials and to permit the use of alternative or substitute materials.

45. Simplify lines to reduce the number of sizes, shapes, grades, colors, etc.

46. Use standard materials and sizes instead of specials.

47. Test all available substitute materials as to suitability, so as to conserve scarce and critical materials.

48. Select alloys not unnecessarily good for the intended purpose, to conserve alloying elements and the producer's time and capacity

PRODUCTION

56. Review production methods, cuts, etc., to insure maximum utilization of materials.

57. Produce less waste and conserve materials by shearing instead of sawing, sanding of cutting off on lathes, welding and riveting.

58. Recover and reclaim used cuttings, surplus paints and spray finishes.

59. Provide for regular maintenance of machinery, to get maximum production from minimum spoilage, and longer life.

60. Adjust machines and methods to use substitute materials.

61. Sort blanks, short ends, cut-offs, etc., for possible re-use on small jobs in the same or other departments.

62. Get maximum service from tools, etc., by instructing workers in proper use of use.

63. Handle resharpening of tools

THE WAR

CONSERVATION AND SALVAGE PROGRAM



utilization of
production

SOURCES OF INFORMATION

Source on special phases of conservation and salvage problems is

Conservation, O.P.M., Washington, D. C.
Chief, Conservation and Substitution Branch
Chief, Specification Branch
Chief, Simplification Branch
Chief, Industrial Salvage Section
Chief, General Salvage Section
Division and Reclamation of Materials in Industry,
Bureau of Mechanical Engineers, 29 West 39th St., New York, N. Y.
Office of your State Defense Council.
Your industry.
Associations.

Conservation has also undertaken to appoint a qualified consultant on
local area, whose services and counsel will be available without charge.

CONSERVATION

Conservation methods, template lay-
out for maximum utilization of raw

Conservation and conserve materials
of sawing, sawing instead
of lathes, welding instead of

Conservation used cutting oils, lubri-
cants and spray finishes.

Conservation maintenance service on
for maximum production, mini-
mum longer life.

Conservation and methods to the use of

Conservation ends, cut-downs, clippings,
use on smaller parts made
in repair department.

Conservation service from taps, drills, files,
workers in proper methods

Conservation of tools as a separate,

OFFICE

76. Establish a pool of surplus and little used
office machinery, to be issued, transferred, or
scheduled for use as required.

77. Centralize control of stationery stores and
office supplies.

78. An educational campaign against the
wasteful use of office supplies frequently re-
sults in savings of from 25% to 33%.

79. Mechanical pencils are inexpensive, utilize
leads more completely, and conserve the brass
and rubber of eraser tips.

80. Standardize sizes of printed forms to cut
without waste from standard paper sizes.

PACKING AND SHIPPING

88. Standardize container and package sizes
and styles.

89. Utilize existing mold equipment for bot-
tles, plastic containers and closures, rather
than designing new packages.

90. Avoid intricate designs requiring more
material and more metal for molds.

91. Avoid excessive internal unit packing and
multiple wrapping, using an adequate single
container or wrapping instead.

92. Where possible, use a greater proportion
of the larger sizes of containers, requiring
less packing material per unit of product.

93. Design away from scarce packaging and
shipping materials (cellulose, metal foil)

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parts, material now being destroyed or burned but which has salvage value.

5. **Seek markets** for equipment and surplus stocks which may be useful in other plants.
7. **Direct salvage shop operation.** (Where no special Director of Conservation is appointed, this generally comes under the supervision of the Superintendent or Storekeeper.)
8. **Maintain a list** of scrap material dealers and yards through which various types of waste materials can be turned back into the production stream in prompt and orderly fashion.
9. **Classify** and segregate scrap, and supervise its handling to avoid contamination and secure maximum return.
0. **Speed** the return of scrap to mills and refineries through existing channels.
1. **Devise** awards and incentive systems to recognize effective work in the conservation program.
2. **Organize** and direct the necessary staff for carrying out the program. Veteran employees with imagination, initiative, and practical familiarity with the company's materials and operations are frequently ideal for such work.
3. **Maintain contacts** with the Bureau of Industrial Conservation, O.P.M., local manufacturers' associations and appropriate trade associations, to learn the best methods and to pass along his own successful experience for the common good.
4. **Report** regularly to management and to department heads on the progress of the program and to submit further recommendations.

rather than returning these to scrap, the production department advised of such stocks.

20. **Check all requisitions** for the possibility of using surplus or other stock on hand rather than buying new material.
21. **Review and revise** specifications away from scarce materials and to permit the use of alternative or substitute materials.
22. **Find and suggest** available substitutes for scarce materials.
23. **Standardize requirements** of using departments to avoid large and duplicating stocks.
24. **Simplify** wherever possible. Reduce the number of grades, sizes, and colors to be purchased and carried in stock.
25. **Schedule deliveries** closely to production requirements, avoiding rush orders and excessive inventories.
26. **Back up** the purchase order schedule with a vigorous expediting system.
27. **Repair** and refinish used office furniture, files, and equipment for issue against expanding requirements.
28. **Keep accurate costs** on reclamation of supplies and equipment, bearing in mind that material, not cost, is the governing factor in the present emergency.
29. **Report promptly** any materials which are obsolete, and see that they are diverted to other use or disposed of as scrap.
30. **Meet regularly** with engineering and production executives to promote better use of materials.
31. **Exchange lists** of surplus materials with neighboring plants for possible utilization and to develop possible sources of supply.

to eliminating these in favor of stock moving items.

37. **Return promptly** to stock and store all materials received without purchase, such as returns, discarded equipment, display materials, etc.
38. **Dismantle** such equipment promptly into component parts—electrical, fasteners, etc.—so that it may be either scrapped.
39. **Report** all idle stock promptly for removal or scrap disposal.
40. **Be a good housekeeper** to avoid accumulation of idle stock and to prevent loss.
41. **Require "item for item"** return of equipment before issuing new equipment to avoid carelessness and loss.
42. **Tag minimum** stand-by quantities of critical items and materials, and issue only with special authorization.
43. **Paint ends** or edges of alloy tubes, etc., with identifying color to segregating scrap and avoiding

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to eliminating these in favor of standard fast moving items.

Return promptly to stock and stock records all materials received without purchase orders, such as returns, discarded equipment, used display materials, etc.

Dismantle such equipment promptly into its component parts—electrical, fastenings, lumber, etc.—so that it may be either utilized or scrapped.

Report all idle stock promptly for reclamation or scrap disposal.

Be a good housekeeper to avoid accumulation of idle stock and to prevent waste.

Require "item for item" return of tools or equipment before issuing new supplies, to avoid carelessness and loss.

Tag minimum stand-by quantities of all critical items and materials, and issue these only with special authorization.

Paint ends or edges of alloy sheets, rods, tubes, etc., with identifying color to aid in segregating scrap and avoiding contamination.

intended purpose, to conserve alloying elements and the producer's time and capacity.

49. Check product design to eliminate frills, excessive weight, excessive thickness, etc.

50. Check design of parts so as to get maximum utilization and minimum waste from raw material sheets, strip, etc.

51. Survey all plant equipment, particularly idle, stand-by or discarded machines, with a view to applying or converting it to useful production.

52. Report promptly any equipment which is definitely obsolete, and see that it is disposed of as scrap.

53. Survey the possibilities of reclamation of supplies and equipment, and direct such reclamation work.

54. Survey the possibilities of utilizing by-products, not only of materials but of heat generated by incinerators, etc.

55. Meet regularly with purchasing and production executives to promote better use of materials.

of use.

63. Handle resharpener of tools as a separate specialized operation, to insure that it is properly done and to conserve production time.

64. Work through foremen to reach even machine operator in preventing spoilage and minimizing waste at the source.

65. Provide training courses and other educational aids wherever necessary or practical.

66. Impress every worker with the importance of his particular part in the national production and conservation effort.

67. Constant reminders in the form of pictures, illustrations of right and wrong methods, envelope enclosures, house organ pull-out, etc., are potent aids to the conservation program.

68. Provide adequate lighting to avoid spoilage.

69. Less waste accumulates in a plant which is kept clean and bright at all times.

70. Schedule long machine runs on identical material to avoid contamination of clean machines thoroughly when changed materials.

71. Train workers in the definition of scrap to recognize potential salvage values.

72. Train workers in the handling of scrap to avoid contamination; provide separate containers, clearly marked, for each class of material.

73. Sort sweepings and miscellaneous waste to recover scrap values.

74. Report immediately to Director of Conservation when equipment goes out of use.

75. Meet regularly with purchasing and engineering executives to promote better use of materials.

Part 2

Issue of February 1942

PURCHASING

80. **Standardize sizes** of printed forms to cut without waste from standard paper sizes.
81. **Eliminate unnecessary** forms and records, and unnecessary carbon copies of necessary forms.
82. **Provide for regular** maintenance and repair of office machinery, for longer satisfactory use.
83. **Conserve filing space** and equipment by the use of transfer files, and by prompt removal from dead storage.
84. **Establish a time schedule** for the retention of old records, and dispose of them when the stated period has elapsed.
85. **Destroy only** confidential records by burning; utilize others as paper scrap.
86. **Separate paper scrap**—white and colored, news and book or catalog stock—before sending it to the baler, for greater salvage values.
87. **Obsolete engravings** and electrotypes, and standing type for catalogs, forms, advertising material, etc., are tying up tons of urgently needed metal. Release such material as promptly as possible for re-use or scrap.
93. **Design away from** scarce packaging and shipping materials (cellophane, metal foil, manila rope, steel strapping, paperboard, plastics) and keep up to date on limitation orders and other regulations affecting their use.
94. **Pack securely** and handle carefully to avoid wasteful breakage and damage.
95. **Repeated small shipments** are wasteful of packaging material; combine or hold for larger unit shipment when possible.
96. **Redesign present boxes, crates, etc.,** to use less material, incidentally saving on excessive transportation costs.
97. **Utilize paper** waste as packing material.
98. **Salvage lumber** from incoming shipments for use in your own shipments or for other plant use.
99. **Re-use cartons** and other containers when possible. A letter of explanation to customers regarding this policy, or an explanatory sticker attached to the re-used container, is helpful. Avoiding extensive printing on cartons assists in making them available for re-use.
100. **Collect and segregate waste** and scrap shipping materials—paper, paperboard, wire, steel strapping, nails.

Prepared by

STUART F. HEINRITZ

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